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VACCINE TREATMENT

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My intention is to discuss briefly certain more or less recent developments in connection with vaccine treatment. For this purpose it is not now necessary to review in detail the various stages in the growth of knowledge on which the principles and practice of vaccination, preventive as well as curative, are based. The aim in either case has been to strengthen and to hasten the natural processes that result in protection against infection and in cure of infection.

Curative vaccine treatment, which I shall discuss, is a direct outgrowth of the increasingly successful prevention of various infectious diseases by means of artificial immunization, and may be said to represent a culmination of the efforts to combat infection with its own weapons, as it rests primarily on the assumption that under certain conditions the production of specific antibodies by the infected organism can be increased with curative results on injection of special preparations of the virus or the bacteria which caused the infection.

This conception is in full harmony with the accepted interpretation of the preventive action of many bacterial and other vaccines or antigens as due to the easily demonstrable formation of new and specific antibodies, which persist for a longer or shorter time, and to the greater readiness, which also is demonstrable in various ways, with which such formation is renewed when the antigen again enters the vaccinated body, as may occur in the form of the living germs. Except as tested in Pasteur's experiments on inoculation against rabies after the infection has been received, this explanation of the supposedly curative action of vaccines has not been put to the direct test in animal experiments, largely, it seems, because the animal infections with which we are acquainted are not regarded as suitable for that purpose since they do not appear to duplicate sufficiently the human conditions. Whether or not the practical results of vaccine treatment for curative purposes support the hypothesis as to the mode of action on which it is based is even now a debatable question. The conditions under which vaccine treatment is practiced have been allowed to change so much since its formal introduction by Wright in 1902, and have acquired in large degree such character, that there are no secure foundations for comprehensive interpretation and final judgment as to the practical value and significance of the results. A hurried review of events may serve to make this point clearer.

In the early days after Wright's discovery of the opsonins and his advocacy of specific vaccine treatment under the guidance of the opsonic index, much attention was given to this index as a measure of specific resistance and in less degree as a means of diagnosis. Soon doubts arose as to the value of the index; the accuracy of the method was questioned, and emphasis was put on the limitations of the results as not being a measure of the final degree of immunity because applicable to one factor only, leaving unmeasured other factors equally important and not necessarily subject to parallel fluctuations of activity. The outcome was the abandonment of the index as an essential element in vaccine treatment, which in the meantime rapidly passed into general use and, at least in this country, soon became the object of an unrestrained and indiscriminate exploitation, to which the medical profession has offered but little resistance. In a short time various practices were introduced, which are not in harmony either with the conditions demanded by the primary hypothesis or with the teachings of bacteriology and immunology, and which before long reduced vaccine treatment as generally practiced from a carefully controlled, essentially scientific procedure to one of guesswork and routine.

The first departure from the course of safety and conservatism was the uncontrolled delegation of the making of vaccines to commercial concerns. According to the fundamental principles, every consideration but that of expediency demands that therapeutic vaccines shall be composed of bacteria as little different and as little removed as possible from the strains causing the infections against which the vaccines are to be used. It is evident that in preparing vaccines on a large scale this condition cannot be met because the changes in virulence and affinities which take place in bacteria under artificial cultivation cannot be avoided. Indeed, there is always danger that with time the specific element on which the desired antigenic effect depends may be lost altogether. There is the further difficulty that the antibodies evoked by one strain may not act on other strains of the same species. That this is not placing undue importance on some remote possibility of no real practical significance is shown conclusively by the regular occurrence of fixed varieties according to antigenetic properties in certain species of pathogenic bacteria as illustrated so well by the pneumococcus. So far as we now know, there are no all-inclusive strains of bacteria causing human infections which might be used to overcome this narrow specificness of immunizing action. In recognition of this drawback to wholesale vaccine making, the

polyvalent vaccine was evolved and made to contain so many strains from different sources that every possibility would seem to have been covered. But after all this is an unsatisfactory substitute for the fresh autogenous vaccine, which, it would seem, offers the best hope that the indications of each case at all times will be met in the most direct way. The principle of using autogenous vaccine as the rule has the further great advantage that to secure it the definite etiology of the infection must be established — a true etiologic diagnosis must be made and there is an end to guesswork. Undoubtedly the good results obtained by careful scientific physicians who use autogenous vaccines are due in no small degree to the careful study of the patient whereby is disclosed not only the nature of the outstanding infection but in many cases also hidden bacterial foci that often perhaps are the primary source of the evident localizations, and hence require removal before permanent cure can be established.

It was the inability of most physicians to make or have made the bacteriologic studies necessary to obtain the etiologic diagnosis coupled with demand for vaccine treatment that paved the way for the commercial vaccine and also for the second, but less excusable and more harmful, departure from the proper course, namely, the acceptance by physicians of the short cut to vaccine treatment without careful diagnosis offered by the ready made mixed vaccines and by semisecret, unstandardizable mixtures of bacterial products—phylacogens. Carried to its logical conclusion, the reasoning that led to these makeshifts would justify the same treatment of all infections, the only diagnosis required being infection. As to semisecret cultural filtrates, no reason can be found to warrant their use as vaccines: their antigenic values, if they have any, have not been determined; they are not uniform in composition and cannot be standardized; they are more or less toxic, the toxicity being affected by small but uncontrollable differences in the conditions under which bacterial growth takes place. At the same time as commercial mixed vaccines contain no autogenous elements, there is the further evident objection that there exists no such constancy of bacterial association in mixed infections as would permit the use of ready made mixtures under the principles of specific vaccine treatment. By accepting the mixed vaccines of commerce, the physician abandons reason and begins to grope in the dark, forgetting that "a multitude of remedies is the child of ignorance." His examination of patients tends to become more and more superficial, his diagnosis slipshod, and his treatment routine, without positive indications, and without individualization. If more than one vaccine needs to be given, why not follow the simple and perfectly rational plan of mixing them at the time of injection or of injecting them separately?

As vaccine treatment became readily available by means of stock and mixed vaccines of all kinds, its use was extended to practically all forms of infection, acute and chronic, general and local, and even to conditions clearly not infectious in nature, regardless of whether or not there was any good reason to believe that benefit would come from efforts to stimulate the output of specific antibodies under all these circumstances. As we look back it seems now as if special efforts were made "to hasten the use of the remedy while it still cured." As would be expected, the interpretation of the results often has lacked the discrimination and questioning which accompany the efforts of critical intelligence. The great difficulties in the way of reaching sound conclusions as to the real value of a special therapeutic method — at best with an indirect and auxiliary action—in a great variety of infections that are subject to spontaneous improvements, and most of which as a rule are spontaneously curable, did not in all cases lead to proper caution in judging the apparent results of the routine and indiscriminate use of vaccines in this large field. The observations have not been always trustworthy or the reasoning just. The simple fact is that we have no reliable evidence to show that vaccines, as used commonly, have the uniformly prompt and specific curative effects proclaimed by optimistic enthusiasts and especially by certain vaccine makers, who manifestly have not been safe guides to the principles of successful and rational therapeutics.

While uncertainty and disappointment have developed in regard to the usefulness of vaccines, this must be ascribed more to fault of exploitation than to fault of the thing exploited; for in the original field, restricted to subacute and chronic local infections under mechanical conditions that are favorable for healing, cautious observers, proceeding as nearly as possible in accord with the principles of immunity, have reached the conclusion that specific vaccine treatment may be of great auxiliary value in stimulating the defensive resources of the organism.

That the beneficial action of specific vaccines in hastening recovery in subacute and chronic localized infections may result from increase of specific antibodies, as assumed, looks like a reasonable explanation, as the infecting germs may be so enclosed and walled off that antigenic substances in adequate quantities do not reach the centers of antibody production. It is of course altogether possible that other factors also are concerned in the effects of vaccines, as, for example, stimulation of the leukocytic activity, which is subject to variation, liberation of nonspecific ferments, and protein fever; but until recently only scant attention was given to such possibilities. According to this view of the nature of the action of vaccines, acute infectious diseases were regarded as not suitable for vaccine treatment because here the infecting germs, widely distributed in the body, would furnish all the stimulus needed to call forth an abundant supply of antibodies. The original theory of vaccine treatment really furnishes no basis for the application of vaccines to acute infectious diseases and when, nevertheless, reports were made of striking effects from vaccines in acute disease, especially in typhoid fever and in pneumonia, we had no preconceived or readily available explanation to offer of the unexpected results. This brings us to the consideration of the remarkable development during the last year or two of vaccine treatment of typhoid fever.

While isolated instances of rapid improvement and even crisis ending in recovery are and have been ascribed to the injection of specific vaccines and also of semisecret culture filtrates in various acute infectious diseases, the true significance of such results in many cases remains doubtful on account of the variable spontaneous course of such diseases. But in the case of typhoid fever at least, as I hope to make clear, the situation is different.

Vaccine treatment of typhoid fever was practiced first so long ago as 1893 by Eugene Fraenkel, who gave

subcutaneous injections of heated thymus broth cultures of typhoid bacilli apparently with benefit. It had been found that this vaccine would protect animals against living typhoid bacilli, and Fraenkel wanted to determine whether or not it would modify the clinical picture of typhoid fever when injected during the attack. The method received but little attention and, save for interesting experiments of Petruschky and of Richardson, it was not until about 1909 that reports began to appear of more or less favorable results from the subcutaneous injections of typhoid vaccines of various kinds. The results were not striking and yet not without encouragement, as the intensity of the symptoms and the duration of the attack seemed to be reduced. In a few cases rather quick cures followed, as had been noted by Fraenkel also. Then came the intravenous injection of the vaccine by Ichikawa (1912) and others, with such noteworthy effects as to attract general attention and secure for the method prompt trial at many hands.

At present it seems to be the opinion of almost all who have used the intravenous method of injection that by it the course may be modified and shortened, and in a considerable number of cases even cure by crisis produced. As it is very rarely that typhoid ends by spontaneous crisis — according to good authority in about 0.1 per cent. of the cases — the occurrence of recovery by crisis in from 30 to 40 per cent. after intravenous injection certainly cannot be ascribed to any chance spontaneous cure. The striking immediate results of an effective injection are now well known: Within half an hour or so a chill, often severe, occurs with a rapid rise of the temperature, followed after some hours by a progressive fall, relaxation, profuse perspiration, and rapid subjective and general improvement; first the number of leukocytes falls, and then there is a rapid rise to 15,000 or more. The subsequent course may be a permanent return to normal temperature and prompt recovery — crisis; a rise of temperature to the previous level and then a gradual fall to normal in a few days — lysis; or the attack may be resumed, running an apparently unmodified or somewhat milder course than before the injection. When the attack is resumed, reinjection after a few days may cut it short; but it appears that if from two to three injections from three to four days apart have only temporary effect, no abortive cure need be expected.

Crisis has been produced in typhoid fever by the injection not only of typhoid vaccines of various kinds, but also of colon vaccine, of mouse typhoid vaccine, of meningococcus vaccine, and even of albumose. Indeed, the specific nature of Fraenkel's results in 1893 was challenged promptly by Rumpf, who claimed the same results from the injection of products of pyocyaneus bacilli. In other infections than typhoid, nonspecific products intravenously may cause acute critical reactions, as typhoid vaccines in paratyphoid fever, colon vaccines in puerperal sepsis, pneumococcus and typhoid vaccines in erysipelas,[1] and typhoid vaccines in pneumonia.[1] In normal persons the intravenous injection of typhoid vaccine may give a reaction much like that in typhoid fever, but a larger dose may be required. I may mention, too, that in pneumonia intravenous injection of autolyzed pneumococci, prepared by Rosenow's method, may cause an immediate chill with rise and fall of temperature and fall and rise of leukocytes; in short, the same phenomenon as seen in the induced crisis in typhoid, and followed in some cases by prompt recovery.[1] The intravenous injection of protein substances appears to produce a reaction which closely resembles the chills and fever that occur naturally in the course of various infections. We are reminded of reactions observed by Vaughan in his experimental study of protein fever and also of effects said to follow intravenous injections of nonprotein colloids, for instance, gold.

Whether or not the production of this kind of reaction is associated frequently with improvement and prompt recovery in other diseases than typhoid is not known. Typhoid fever is the only disease which has been treated systematically by the new method, and as yet specific vaccines have been used almost entirely. In their admirable and thorough study of a series of fifty-three cases of typhoid, treated with Gay's vaccine, Gay and Chickering[2] found that no permanent benefit resulted in 34 per cent., lysis with shortened course in 24.5 per cent., and critical cure in 41.5 per cent. They report no alarming symptoms from the injections; but others using different methods have reported instances of collapse, of hemorrhage, and of hyperpyrexia with delirium and death, so that this treatment is not to be lightly undertaken.

Gay would ascribe the rapid cure to the combined action of specific antibodies and the leukocytosis. This view is supported by the facts observed by several that the most pronounced results have been obtained after the tenth day of the disease when the general reaction against the infection is fully developed, and that much less effect has been achieved in the incubation period. As the same results may be produced in typhoid fever by nonspecific vaccines and even by albumose as by various forms of typhoid vaccines, although whether in the same percentages is not known, it is natural that other views should be presented. Jobling and Petersen[3] find that in animals the intravenous injection of killed bacteria mobilizes nonspecific ferments, and they suggest that the effects of specific vaccines and other products in typhoid fever are due to the work of these ferments in destroying bacilli and in reducing toxic substances to nontoxic. It has been suggested also that following the shock of the intravenous injection the organism passes into a refractory condition (antianaphylaxis) in which it ceases to react to the typhoid bacillus and its products. These views, it seems to me, may serve as suggestions for more formal hypotheses to direct investigations for the purpose of learning more of the nature and the effects of the reaction as well as its therapeutic value.

SUMMARY

If the presentations in this paper are trustworthy, it may be concluded that the general results so far from the routine use of commercial vaccines, polyvalent and mixed, have no value as evidence for or against the curative usefulness of vaccine treatment, and hence no value, either, with respect to the soundness of the theory on which vaccine treatment primarily has been developed.

In subacute and chronic localized infections, the results appear to indicate that specific vaccines properly and skillfully used have value, quite likely because they increase the production of specific antibodies, as

1. Unpublished observations by George Mathers and C. W. Wells.

2. Gay, F. P., and Chickering, H. T.: Treatment of Typhoid Fever by Intravenous Injections of Polyvalent Sensitized Typhoid Vaccine Sediment, Arch. Int. Med., February, 1916, p. 303.

3. Jobling, J. W., and Petersen, William: Bacteriotherapy in Typhoid Fever, THE JOURNAL A. M. A., Aug. 7, 1915, p. 515.

demanded by the theory, but probably also because they stimulate leukocytic and other activities.

In typhoid fever and possibly also in other infectious diseases, the intravenous injection of specific vaccines and also of other substances may induce crisis and prompt recovery. The mechanism of this action is not fully understood; but as it involves something more than or different from specific stimulation of the production of antibodies, it cannot be interpreted in terms of the current conception of the action of vaccines. We are entering, therefore, a new and interesting development in the study and treatment of infectious diseases.

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THE DETERMINATION OF ALVEOLAR CARBON DIOXID TENSION BY A SIMPLE METHOD*

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In acidosis the tension, that is to say, the effective concentration of carbon dioxid in the alveolar air, is diminished.[1] By the determination of this tension the diagnosis of acidosis may be made, the degree of severity estimated, and the results of treatment followed. The determination may be carried out in a few minutes' time and with no especial discomfort to the patient. Two procedures are involved: the collection of the alveolar air, and the analysis of the sample.

COLLECTION OF ALVEOLAR AIR

The method of collection is essentially that of Plesch,[2] as modified by Higgins.[3] A rubber bag of approximately 1,500 c.c. capacity[4] is connected by means of a short rubber tube to a glass mouthpiece.[5] About 600 c.c. of air are blown into the bag with an atomizer bulb, and the rubber tube clamped off by a pinchcock. The subject should be at rest and breathing naturally.[6] At the end of a normal expiration, the subject takes the tube in his mouth; the pinchcock is released and the subject's nose closed by the observer. The subject breathes back and forth from the bag four times in twenty seconds, emptying the bag at each inspiration. The observer should indicate when to breathe in and out. Breathing more frequently will not greatly alter the results. At the end of twenty seconds, the tube is clamped off and the air analyzed. The analysis should be carried out within three minutes' time, as carbon dioxid rapidly escapes through rubber.

The foregoing procedure applies to patients who are capable of cooperating to some extent. In the case of comatose patients, the initial amount of air in the rubber bag must be greater (1,000 c.c. at least), and the period of rebreathing prolonged to 30 seconds.[7] This is necessary, as it is not feasible that the bag be completely emptied of air at each inspiration; and therefore a longer time is required for the carbon dioxid tension in the bag and in the lungs to become equal. The initial amount of air in the bag should be such that it is at least one half and preferably as much as two thirds emptied at each inspiration. Since comatose patients cannot hold the mouthpiece, some form of mask is necessary. This may be a gas anesthetic mask[8] or such a device as described below for use with infants.

A special mask has been devised for the collection of alveolar air from infants.[9] It is made from the nipple of a wide mouth (Hygeia) nursing bottle and a piece of thin rubber tissue (dental dam). A sheet of the tissue (8 by 10 inches) is perforated in the center by a piece of hot metal or glass tubing of large bore. The hole is stretched and pulled over the nipple and slipped down to the lower rim. A small amount of rubber cement is applied to hold the tissue and nipple together. A strip of adhesive plaster three-eighths inch wide is applied around the rim of the nipple so as to overlap the rubber tissue and hold it firmly in place. The extreme tip of the nipple is cut off and a short glass tube, three eighths inch in diameter, inserted.

"In making a collection of alveolar air from infants a rubber bag of 500 c.c. capacity is connected with the mask and partially filled with air by means of an aspirator bulb. The neck of the bag is closed off by a pinchcock or with the fingers, the mask placed over the nose and mouth of the infant and the rubber tissue closely drawn around the face so as to prevent the escape of air. The mask should, if possible, be placed over the face just at the end of expiration. Respirations are allowed to continue for from twenty-eight to thirty-two seconds, and at the end of an expiration the neck of the bag is closed off and the mask removed from the face. We have found that it is necessary that the infant should be breathing quietly for one minute previous to the collection of the air sample, as vigorous crying, just before the mask is put on, leads to a lowering of the carbon dioxid tension, as determined, by several millimeters. Crying during the collection of the sample almost invariably occurs and facilitates mixing of the gases. The effect is to raise the tension somewhat if crying is very vigorous, but not to such an extent as to be significant. The initial amount of air in the bag must be such that during inspiration the bag is from one-half to two-thirds empty, but never completely collapsed. The amount of air required for infants under 1 year of age varies from 250 c.c. to 400 c.c."

The mask described above for use with infants may be very conveniently used for the collection of alveolar air samples from dogs. The animal's nose is inserted into the mask and the rubber tissue drawn closely around the muzzle. The time of a collection need not exceed twenty-five seconds.

For analysis of the air samples, the apparatus required comprises eight test tubes, containing standard phosphate solutions; a standard bicarbonate solution; a small test tube; a glass tube or pipet drawn out to a capillary point, and a box for color comparison.

* From the Harriet Lane Home and the Department of Pediatrics, the Johns Hopkins University.

1. For discussions of the significance of alveolar carbon dioxid tension, see Porges, Leimdorfer and Markovici: Ztschr. f. klin. Med., 1911, lxxiii, 389. Higgins and Means: Jour. Pharmacol. and Exper. Therap., 1915, vii, 1. Peabody: Am. Jour. Med. Sc., 1916, cli, 184. Howland and Marriott: Bull. Johns Hopkins Hosp., 1916, xxvii, 63.

2. Plesch: Ztschr. f. exper. Path. u. Therap., 1909, vi, 380.

3. Higgins: Pub. 203, Carnegie Institute of Washington, 1915, p. 168; Boothby, W. M., and Peabody, F. W.: A Comparison of Methods of Obtaining Alveolar Air, Arch. Int. Med., March, 1914, p. 497.

4. A basket ball bladder or a hot water bag answers very well. If the latter is used, the neck may be closed by a rubber stopper carrying a short glass tube three-eighths inch in internal diameter.

5. An ordinary piece of glass tubing with rounded edges, 1½ inch long, and three-eighths inch in internal diameter.

6. Especially to be guarded against is a deep, voluntary inspiration just before the collection begins, as this causes too low a determination.

7. The bag is clamped off at the end of that expiration occurring nearest to thirty seconds, as no great error is introduced by prolonging the time of rebreathing by two or three seconds.

8. Some advantage may be gained by inserting a large three-way stopcock of metal or glass between the mask and the bag. When such a stopcock is used, the mask is first put in place on the patient's face with the cock so turned that he breathes the outside air for a few respirations. At the end of an expiration the cock is quickly turned so as to bring the bag and the mask into connection.

9. Howland and Mariott: Am. Jour. Dis. Child., May, 1916.

PRINCIPLE OF THE METHOD OF ANALYSIS

The method depends on the fact that if a current of air containing carbon dioxid is passed through a solution of sodium carbonate or bicarbonate until the solution is saturated, the final solution will contain sodium bicarbonate and dissolved carbon dioxid. The reaction of such a solution will depend on the relative amounts of the alkaline bicarbonate and the acid carbon dioxid present. This, in turn, will depend on the tension of carbon dioxid in the air with which the mixture has been saturated and *will be independent of the volume of air blown through, provided saturation has once been attained.* High tensions of carbon dioxid change the reaction of the solution toward the acid side. Low tensions have the reverse effect; hence the reaction of such a solution is a measure of the tension of carbon dioxid in the air with which it has been saturated.

The reaction of such a solution may be determined by adding to it an indicator such as phenolsulphonephthalein,[10] which shows over a considerable range of reaction definite color changes. A certain color indicates a certain reaction.

Solutions of a given reaction may be prepared by mixing acid and alkaline phosphates in definite proportions. Such solutions may be kept unaltered for long periods of time and can be used as standards for comparison.

PREPARATION OF STANDARD PHOSPHATE SOLUTIONS[11]

Fifteenth molecular acid potassium phosphate: Of the pure, recrystallized salt (KH_2PO_4), 9.078 gm. are dissolved in distilled water, 200 c.c. of 0.01 per cent. phenolsulphonephthalein solution are added, and the whole is made up to 1 liter.

Fifteenth molecular alkaline sodium phosphate: The pure, recrystallized salt ($Na_2HPO_4 \cdot 12H_2O$) is exposed to the air for from ten days to two weeks, protected from dust. Ten molecules of water of crystallization are given off and a salt of the formula $Na_2HPO_4 \cdot 2H_2O$ is obtained. Of this salt, 11.876 gm. are dissolved in water, 200 c.c. of 0.01 per cent. phenolsulphonephthalein solution are added, and the whole is made up to 1 liter. The solutions are mixed in the proportions indicated in the tabulation.

PROPORTIONS IN WHICH SOLUTIONS ARE MIXED

Mm.	10	15	20	25	30	35	40	45
Acid potassium phosphate, c.c.	17.8	25.2	31.0	35.7	40.5	45.0	47.0	50.2
Alkaline sodium phosphate, c.c.	82.2	74.8	69.0	64.3	59.5	55.0	53.0	49.8

The solutions thus made are put in small test tubes (a convenient size is 10 by 75 mm.) and stoppered or sealed off. These standard tubes should be kept in a dark place when not in use.

The standard bicarbonate solution is prepared either by weighing out 0.530 gm. of desiccated sodium carbonate or by measuring accurately 100 c.c. of tenth normal sodium hydroxid into a 1 liter volumetric flask. Two hundred c.c. of 0.01 per cent. phenolsulphonephthalein are added, and the whole is made up to the mark with distilled water. Carbon dioxid from a cylinder or from the lungs may be passed through this solution to convert the alkali into bicarbonate, or the solution may simply be used as it is, as the alveolar air that will be blown through the solution subsequently will accomplish the same purpose.

The comparison with the standard colors is conveniently made with a box similar to that used with the Sahli hemoglobinometer, but containing three instead of two holes. It is a small, flat box of blackened metal, 55 by 45 by 20 mm., backed with opal glass and with three slits open on the front. By the use of this device, slight color changes may be easily detected, and the temperature of the tubes is not raised by the heat of the hands. In addition, the whole device, with tubes, may be immersed in water at a given temperature.

All of the standard solutions used in this method should be kept in glass which does not readily give off alkali, that is to say, such a glass as "Jena," "Non-sol" or "Pyrex." A small amount of toluene or thymol added to each solution serves to prevent the growth of molds.

TECHNIC OF THE METHOD OF ANALYSIS

In analyzing a sample of air, about 2 or 3 c.c. of the standard bicarbonate solution are poured into a clean test tube of the same diameter as the tubes containing standard phosphate solutions, but from 100 to 150 mm. long. Air from the bag is then blown through the solution by means of a glass tube drawn out to a fine capillary point, until the solution is saturated, as shown by the fact that no further color change occurs.[12] The tube is stoppered and the color immediately compared with that in the standard tubes. By interpolation, one can readily read to millimeters. Color changes are not quite so sharp above 35 mm. as at the lower end of the scale, but here changes are of less significance. In making the color comparisons, the solution being compared is placed between the two standards which it most nearly matches. When there is doubt as to whether the color of the solution is higher or lower than one of the standards, changing the order in which the tubes are placed in the comparison box will generally make the relationships clear.

The standard solutions described are so prepared as to give correct results when the determination is carried out at a temperature of from 20 to 25 C. (from 68 to 77 F.). When the room temperature is considerably higher or lower than these points it is advisable to immerse the tubes in water at approximately 25 C. during the blowing. They may be removed from the water for the color comparison, however, provided this is quickly made. The differences due to the ranges of temperature occurring under ordinary circumstances are practically negligible.

No correction for barometric pressure is required as from the nature of the determination, barometric fluctuations are self-corrective. Variations in the temperature of the subject are never great enough to affect the value as much as 1 mm., and therefore may be neglected.

RESULTS

If the simple conditions described above for the collection and analysis of air samples are complied with, duplicate determinations usually agree within 2 mm. More than one determination should be made in every instance, especially in confirmation of a low tension, since errors in the technic of collection of the sample lead to too low rather than to too high results.

10. Levy, R. L.; Rowntree, L. G., and Marriott, W. M.: A Simple Method for Determining Variations in the Hydrogen-Ion Concentration of the Blood, Arch. Int. Med., September, 1915, p. 389.

11. Standardized phosphate mixtures, sealed in tubes, the standard bicarbonate solution, tubes, color comparison box and other accessories may be obtained from Hynson, Westcott & Co., Baltimore.

12. If the operator first blows his own breath through the solution so as to bring it into approximate equilibrium with alveolar air, saturation may be accomplished with as little as 100 c.c. of air from the bag, blown through during thirty seconds. The same bicarbonate solutions may be used for repeated determinations.

In the case of failure of successive determinations to agree, the fault is much more likely to lie in the collection than in the analysis of the sample.

In normal adults at rest, the carbon dioxid tension in the alveolar air, determined as described above, varies from 40 to 45 mm. Tensions between 30 and 35 mm. are indicative of a mild degree of acidosis. When the tension is as low as 20 mm., the individual may be considered in imminent danger. In coma, associated with acidosis, the tension may be as low as 8 or 10 mm. In infants, the tension of carbon dioxid is from 3 to 5 mm. lower than in adults.

Conditions other than acidosis may affect the carbon dioxid tension. Stimulation of the respiratory center leads to increased pulmonary ventilation and a consequent lowering of the alveolar carbon dioxid tension. Such stimulation may be brought about by caffein,[1] and possibly also by intracranial lesions. The respiratory center may be depressed by morphin, and as the result of certain[13] infections. This leads to an increased carbon dioxid tension. Changes in the excitability of the respiratory center, however, are but rarely great enough to affect significantly the composition of the alveolar air.

"Alveolar" air collected as described above is essentially air which has come in equilibrium with the venous blood in the pulmonary capillaries. The tension of carbon dioxid is approximately that in the venous blood. "Alveolar" air collected by the Haldane or Friederecia methods is air which has come in approximate equilibrium with the arterial blood, and hence is of a carbon dioxid tension from 10 to 20 per cent. lower.

Changes in the pulmonary epithelium such as would prevent the air in the lungs from coming in equilibrium with the blood in the capillaries would, of necessity, affect the composition of the alveolar air. Since very little is known as yet regarding the exact effect of such changes, one is hardly justified in drawing conclusions regarding acidosis from the composition of the alveolar air in patients with pulmonary affections.[13]

13. Means, Newburgh and Porter: Boston Med. and Surg. Jour., 1915, clxxiii, 742.

Earliest Connection of Plague with Rodents.—The Biblical use of the word "plague" is, like its medieval use, more often than not, in the general sense of a pestilence or epidemic disease, rather than in the specific sense of the disease now known as bubonic plague. The expression "a plague of leprosy" is a common one, and there is no reason to suppose that any of the ten plagues of Egypt were of the character of the malady now under discussion. But in a few instances there are some grounds for believing that the disease mentioned was in truth bubonic plague and no other. The most remarkable reference is found in 1 Samuel iv, v, vi, where the Philistines were smitten with emerods or tumors in their secret parts. The Ark was sent to Gath, then to Ekron, and the plague followed it. In the meantime there seems to have been a veritable plague of mice. In the ordinary version there is only incidental reference to "the mice that mar the land" (1 Sam. vi, 5), but in the Septuagint version the references are more distinct, "in the midst of the land thereof mice were brought forth, and there was a great and deadly destruction in the city," and further (1 Sam. vi, 1) that "their land swarmed with mice." The Philistines returned the Ark to Beth-shemesh, with golden images of the tumors and of the mice, but still the plague followed it, and no less than 50,070 persons perished. This is the earliest reference connecting bubonic plague with rodents, and it has taken three thousand years to invent the rat flea and its specific bacillus as agents for spreading the disease.—John W. Fries, *Southern Medical Journal.*

SOME MODERN VIEWS OF SYPHILIS OF THE NERVOUS SYSTEM

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CHICAGO

About forty years ago, when Fournier had the temerity to intimate that in the great majority of cases of locomotor ataxia syphilis was the cause, Ricord, his confrère and the most prominent syphilographer of the day, said that Fournier had taken on himself a very bad burden. A few years later, when Erb in Heidelburg assumed responsibility for a similar point of view, medical Germany was mobilized against him. So the matter stood for some years and was threshed out with acrimony on both sides.

Later, Negeotte brought forth his epoch-making observation, that in locomotor ataxia there is invariably some evidence of inflammation in the meninges of the cord. Following the practice of Quincke, the routine examination of the spinal fluid determined the presence of cellular peculiarities invariably present in cases of locomotor ataxia as well as in those of general paresis. General paresis and locomotor ataxia from that time have proceeded side by side in the estimation of the medical profession as either being caused by syphilis or being intimately associated with syphilitic processes affecting the neural axis.

Then came Schaudinn with the discovery of the spirochete as the actual cause of syphilis, closely followed by Wassermann, whose reaction proved the essential fact of syphilis in these diseases. The matter has been finally and positively clinched through the discovery, by Moore and Noguchi, of the spirochete in the lesions of tabes and general paresis. Now we are in a position to say that locomotor ataxia and general paresis are manifestations of syphilis. We should no longer use the terms "parasyphilis" or "metasyphilis," coined by Fournier and his followers, because we are dealing with actual syphilis — with late syphilis.

PREVALENCE OF SYPHILIS

For a great many years writers and teachers have contended that there was wide prevalence of syphilis, especially in urban populations. Approximations, based on clinical histories and objective signs, both in private practice and in hospitals, indicated that about 20 to 25 per cent. of all adult males were syphilitic. If this is true, the question as to how many of this tremendous army of syphilitics are subsequently to develop syphilis of the cerebrospinal system is of the utmost importance. Only since we have had the advantage of the Wassermann reaction as a means of diagnosis have we been in a position practically to solve the problem.

The report of Vedder[1] on syphilis among recruits is instructive. The examinations on which this report is based were made at Fort Slocum, near New York, and at Jefferson Barracks, near St. Louis. In New York the majority of those applying for admission to the army were of city extraction and habits, while those in St. Louis came largely from the surrounding country districts. Of all who applied, only those were accepted who were physically fit, and those who showed evidences of syphilis or gave a history of recent syphilis were excluded. Out of the entire number applying, only 17 per cent. were accepted; that is

1. Vedder: Prevalence of Syphilis in the Army, Surg.-Gen. Bull. 8, June, 1915.

to say, 83 per cent. were rejected. In the 17 per cent. selected, the Wassermann test of the blood, made apparently with scrupulous care and checked by competent associate observers, indicated that 16.7 per cent. were syphilitic. The astonishing and alarming fact stands out, that the rural population at Jefferson Barracks seemed to have nearly as high a percentage of syphilis as the urban population examined at Fort Slocum. We are therefore clearly within conservative lines when we estimate that one man in every five is syphilitic.

PREVALENCE OF NERVOUS SYPHILIS

Now the question is, if so many people are syphilitic, how many will have syphilis of the nervous system? Examinations of the spinal fluid in cases of primary and secondary syphilis, according to Finger, give positive reaction for the various tests in 70 per cent. of cases; that is to say, in early syphilis the spinal fluid shows an actual syphilitic process in the nervous apparatus seven times in ten. Altmann and Dreyfuss found this to be true in 82 per cent. of cases. Still further, Hoffmann, Nichols and Steiner have found that, in 15 per cent. of cases in the primary and secondary stages, before changes can be found by Wassermann or other reaction, these spinal fluids are infectious and the disease can be transmitted by their inoculation.

Here emerges the astounding fact, that every case of syphilis from the very first is a case of cerebrospinal syphilis, of nervous syphilis, and that no case of syphilis runs its course, even for a short time, without producing changes in the neural apparatus. Such changes formerly were considered to be a late complication. The ectodermal origin of the neural axis may explain the early involvement of these tissues by a disease marked preeminently by skin lesions.

Thanks to the newer serologic tests, we are awakened to the fact that nervous syphilis has a much wider clinical territory than was even suspected. For instance, Collins,[2] excluding tabes, general paresis and the usual forms of cerebrospinal syphilis, is able to tabulate 245 cases encountered within a short time in his division at the New York Neurological Institute. These syphilitic cases were recognized only by means of the blood and spinal fluid investigations.

FREQUENCY OF TABES AND GENERAL PARESIS

What is the frequency of the late syphilis, which we formerly called parasyphilis or metasyphilis; of tabes, optic atrophies and general paresis?

White, in an examination of 1,016 cases of syphilitic men, found these late syphilitic manifestations in about 1 per cent. Pick and Bandler found paresis in 2.12 per cent. But the most significant statistics that I have found are those tabulated by Mattuschek and Pilcz. They have the detailed histories of 4,134 Austrian army officers who were infected with syphilis between 1880 and 1890, and these cases, which were complete in every detail and brought down to the year 1912, were then reviewed. As you can understand, in the Austrian army the records are reliable and complete, and after such a period of time they would justify definite deductions. Out of this large number, over 4,000 syphilized men, examined twenty-two years after the last of them were infected, Mattuschek and Pilcz found that 4.67 per cent. had developed paresis, more than 1.5 per cent. had developed tabes, or 6.27 per cent. had developed one or both of these diseases. Through all the usual manifestations of syphilis, 20 per cent. of the 4,134 had greatly abridged or lost their lives.

There is, apparently, a peculiar difference in the susceptibility of men and women to the development of these late forms of syphilis. Fischer examined 1,178 syphilitic men and found 3.7 per cent. paretic, while in 888 women he found 0.5 per cent.; that is to say, women are apparently less susceptible to tabes and paresis than are men. But perhaps an explanation of this peculiar sex variation can be found, and I will revert to the matter a little later.

VARIATIONS OF THE SYPHILITIC ORGANISM

It is an interesting fact that Schaudinn was not a physician, but a zoologist. The discovery of the spirillum of syphilis was, in a sense, accidental, in that Schaudinn was selected, in conjunction with Hoffmann, by a committee of the German Academy of Sciences, to investigate the contention of Siegel, that he had found a certain organism, the *Cytorrhyctes luis*, in syphilitic lesions and claimed it to be the cause of syphilis. It was established that this organism has nothing at all to do with syphilis, but it plays an important rôle in having led to the detection of the spirochete. Schaudinn had been deeply interested in the spirilla of animal diseases, in African sleeping sickness and in the relapsing fevers, and with a mind saturated with the subject, he turned his attention to syphilis, naturally first looking for those forms of life with which he was on familiar terms, and he shortly detected the *Spirochaeta pallida*.

This spirochete is not the simple animal that was first supposed, but is capable of great variations in character and in clinical manifestations.

VARIATIONS IN VIVO

The spirochete presents variable strains. It has not the simplicity of the bacteria, although, thanks to Rosenow, we now look on bacteria as capable of great morphologic and clinical differences.

Clinically, for a long period of years it has been recognized that syphilis is not always the same thing, and it has been known to clinicians that there is a variety of syphilis which might be called nervous syphilis. The French observers have been particularly active in gathering data on this point of view. I remember one report concerning five young soldiers who were syphilized from the same source at the same time, four of whom developed general paresis and one developed locomotor ataxia.

A more interesting case is mentioned incidentally by Erb, but was first published by Lavelle. It is the tragic story of a Martha X., who in 1870 was the mistress of a medical student who died in 1873 of cerebral syphilis. In 1871 she transferred to a second medical student, who afterward married and had healthy children, but died in 1880 of general paresis. In the following year she took up with a third student, who also later had healthy children in wedlock, but died in 1882 of general paresis. Then a chemist fell under her spells, and he died in 1890 of general paresis. He was followed by an engineer, who in 1893 died of general paresis. An interesting point here is, that the first victim died of cerebrospinal syphilis and his successors perished from general paresis, a clinical variation that is to be correlated with spirochetal variation.

2. Collins: New York Med. Jour., 1916, ciii, 389.

Clinicians have seen cases of locomotor ataxia in husband and wife, and all clinicians in the field of mental disease have seen husband and wife present general paresis. Conjugal syphilis, conjugal general paresis, conjugal tabes, and conjugal optic atrophy are common terms. In these cases generally the wife has contracted the disease in wedlock from her husband. In nearly all such cases, as is a common observation in the syphilis of married women, there is no history of a primary lesion, and secondaries have been slight or entirely unobserved. The wife has contracted a syphilis of a modified character; in other words, the spirochete has undergone variation in vivo.

Herein may be the explanation of the reduced incidence of tabes and general paresis in syphilitic women. The conjugal cases, however, may indicate that syphilitic infection is possible in very late stages of syphilis, and then it produces a similar form of disease. As a matter of fact, even the unmarked wives and children of paretics and tabetics will usually be found to be Wassermann positive.

Ehrlich agreed with the view that spirochetes produce self-destructive antibodies in the human organism. A few of the original strain, of superior vital qualities, perhaps, are able to persist in spite of the antagonism of the antibodies, and they propagate a second strain, which in its turn arouses the forces of resistance, and so on ad infinitum. Finally, a strain is evolved which is apparently of a lowered fecundity, but of increased resistiveness, and the condition then tends to come to a standstill. In the final stage probably the organism acquires an immunity to the usual remedies. Here is possibly an explanation of the fact that in locomotor ataxia and general paresis mercury and the iodids are of much less value than in the conditions which precede, such as cerebrospinal syphilis, the arteriomeningeal lesions, and the ordinary manifestations of the tertiary stage. Indeed, syphilitic lesions marked by gummy processes rarely are followed by the so-called parasyphilitic disorders. In this clinical observation we see the manifestation of another variation of the spirochete.

VARIATIONS IN VITRO

Variation of the organism has been confirmed by experiments in the laboratory. Noguchi found that the spirochetes obtained from the brains of general paretics required for their development and propagation about sixty to eighty days; Graves of St. Louis, using the blood of general paretics, found that he could produce syphilitic lesions in rabbits by inoculation, but that it required about sixty days; and both these investigators found that with spirochetes obtained from early stages of syphilis three or four weeks were sufficient. The late-stage organism had clearly undergone a differentiation.

Today in Washington, in the laboratory of the Army Medical School,[3] the investigators can produce several varieties of spirochete. They can breed a variety which will produce a hard chancre, or a variety which will produce a chancre lacking the old hunterian characteristics of a saucerlike, indurated base. They can produce a spirochete which will give a rich mucocutaneous efflorescence, or a spirochete which will be poor in cutaneous manifestations, with a tendency to confine its influence on the nervous system. Perhaps we may reach a time when, if we can determine the source of the infection of a syphilitic patient, the stage of the disease and its characteristics in the carrier, we may be able to draw some conclusion as to the course that lies before the patient, and the nature of the clinical history which he may be expected to run.

What of the various methods of intracranial, intraspinal, intravenous, and combined applications of the arsenicals and mercurials? I must admit that all of these measures thus far have not enabled us to cure or positively arrest locomotor ataxia or general paresis. In those cases in which the lesions have not reached the stage of latest syphilis, those in which the disease falls especially on the vessels and the meninges, the prospects of cure are of the very best. It is essential in the conduct of such treatment that we be guided, not by the Wassermann in the blood, but by the condition of the cerebrospinal fluid. No man, in my estimation, is giving his patient the best treatment, or even the proper treatment, who withholds the administration of these remedies before he has obtained, for a period of years, negative results by the Wassermann, the other accepted tests, and the cytologic count in the spinal fluid. The granting of marriage certificates to those who have had syphilis should not turn on the examination of the blood by the Wassermann method, but on careful examination of the spinal fluid.

The problem of treatment appears not to be one of the surgical or mechanical administration of the old or new remedies, but the discovery of some agent particularly biocidal to the organism in its latest variations.

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3. Personal communication to the author.

RECURRENT GENERALIZED HERPES OF INFECTIOUS ORIGIN

REPORT OF A CASE *

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This report of a case of generalized herpes simplex that was recurrent over a period of two years will undoubtedly show its infectious origin. This type of herpes is rare, and the observations made offer suggestions as to the etiology of the more common herpes simplex.

Cases of herpes may be roughly divided into three groups. Though in all three groups the skin lesions show a necrosis and exudation of varying intensity, these and other pathologic findings are most pronounced in the herpes zoster group. Von Barensprung[1] and others described changes in the posterior root ganglion in herpes zoster; but it remained for Head and Campbell[2] to describe these changes in detail. They found, in the ganglion of the posterior root of a part corresponding to terminal skin lesions, changes of acute degeneration, that is, exudation of round cells and hemorrhages, and destruction of cells and fibers. They found acute degeneration and sclerosis in the posterior nerve roots, in the peripheral nerves and the posterior columns of the cord.

The recent work of Rosenow and Oftedal[3] has

* Read before the Society of Alumni, Lebanon Hospital, February, 1916.

1. Von Barensprung: Annalen d. Charite-Kranken., ix, 1361.
2. Head and Campbell: Brain, 1900, xxiii.
3. Rosenow, E. C., and Oftedal, S.: The Etiology and Experimental Production of Herpes Zoster, THE JOURNAL A. M. A., June 12, 1915, p. 1968.

added much to our knowledge of herpes. Streptococci were isolated from removed tonsils, and from pyorrheal pockets and spinal fluid of herpes zoster patients; these were injected into animals with resulting lesions of herpes and changes in the vagus and sympathetic ganglia. Gram-staining diplococci and diplococci in chains were found in and about the ganglia. Other streptococci, or those isolated from tonsils or elsewhere after the patient is cured, do not manifest this similar elective localization when injected into animals. The cultures from peripheral lesions were negative. This work appears to be confirmatory evidence of the infectious origin of herpes zoster.

In a second group of herpes, those due to a known toxic or infectious agent, like changes have been described in the posterior root ganglion. Acute inflammatory changes in the gasserian ganglion have been described when herpes occurred during cerebrospinal meningitis,[4] pneumonia,[5] arsenic, carbonic oxid poisoning, etc. Sunde[6] found a gram-positive diplococcus in the gasserian ganglion of a man with herpes who died of pneumonia.

In these two classes of herpes, herpes zoster and the toxic or infectious cases, the lesions of the nervous system and the microbic origin are established.

On the other hand, in still another group, that of herpes simplex, there is no direct evidence of changes in the ganglia. Heretofore no micro-organism has been found in the terminal lesions; and there has also been absence of other evidence of the infectious nature of herpes simplex.

In my case of generalized herpes simplex, the causative organism — a streptococcus — was isolated. It is termed "simplex" because it accompanied no infectious disease; it was due to no known toxic poison, nor was it a herpes zoster.

The case is of special interest because of (1) its recurrence over a period of two years; (2) the isolation of the causative organism, streptococcus; (3) its cure by vaccine therapy.

Much information and data were kindly furnished by Dr. M. Salzer of Cincinnati, who treated this patient several months before she was seen by me, and to whom my thanks are due. Dr. Berghausen of Cincinnati made the original cultures and vaccine.

REPORT OF CASE

Mrs. X., aged 30, past history negative, for over two years had been having almost continuous crops of herpetic eruptions. The parts chiefly affected were lips, nose, both ears, chest, both wrists, occasionally the leg and forearm. The lesions consisted of vesicles, very fine to pinhead in size, on a base that was red and swollen. Contents of vesicles were clear and would dry up with practically no scaling.

A typical attack would be preceded by much itching and burning, and swelling of the lips. There would be chilly sensations down the spine, profound depression of spirits and total loss of appetite. Then numbers of fine vesicles would appear on a reddened base on the much swollen lips. These would be followed by lesions on the nose, ears and elsewhere. Itching and burning continued throughout.

Physical Examination.—The patient looked thin and anemic; she had lost about 12 pounds in weight. There was a marked lateral curvature of the spine. All organs were normal. Temperature and pulse rate were normal. Blood examination showed a secondary anemia, otherwise negative. The Wassermann was negative. Roentgen-ray examination of the chest, abdomen, head—sinuses and teeth—was negative. There was very little tonsillar tissue.

Special efforts were made to locate the source of infection in the tonsils, teeth or sinuses without success.

Blood culture was negative. Cultures, however, made on blood agar of material aspirated from vesicles, and probably some from tissue about the vesicles, showed a streptococcus in long chains. From subcultures a vaccine was made.

The patient was injected with this autogenous vaccine in doses ranging from 100 million to 1 billion bacteria. Injections were given every three or four days. Reactions followed injections, outbreak of herpetic lesions, and rise of temperature with larger doses. After five weeks of this treatment by Dr. Salzer, the patient came under my care.

The disease had now lasted over two years, and protracted stays in bed were the only means which seemed to check attacks. All the usual methods of treatment, external, internal, hypodermic, change of climate, etc., were tried.

It seemed to me that, as there was some amelioration in the symptoms, gain in strength and lengthening of intervals between attacks, it would be best to continue the only measure that brought relief outside of rest, the vaccine method of treatment. It was essential to use the patient's own organism, as vaccination with other strains of streptococci would not, according to Rosenow's findings, have produced the antibodies of her particular strain. In an endeavor to do away with the negative phase, and in order to give larger doses, I sensitized the autogenous vaccine.

Sensitization was performed by adding to every cubic centimeter of autogenous vaccine 2 c.c. of a polyvalent antistreptococcus serum. This was placed in a thermostat at 37 C. (98.6 F.) for twenty-four hours, and shaken frequently. The preparation was centrifuged. The bacteria were then washed free of serum with sterile saline. After testing sterility, the bacteria, plus antibody, were ready for injection.

Six injections of this sensitized autogenous vaccine were given in one month. The dose was increased from 200 million to 2 billion bacteria. There were no local reactions until the two largest (1½ and 2 billions) were reached, when there was a slight outbreak of the eruption. There were minor constitutional reactions at times, such as depression of spirits, chilliness and loss of appetite following injections; but a gain in well-being, strength and in weight was almost immediate. One more injection quickly controlled a slight outbreak that occurred about a month after treatment had been discontinued.

Five months have elapsed since, and there has been no recurrence; meanwhile the patient has gained 11 pounds in weight, and she is strong and happy.

CONCLUSIONS

The isolation of the micro-organism from the skin lesion, the institution of a negative phase by its injection, with skin manifestations, and the cure, unattainable by any other means than the increase of immunity for the streptococcus by the injection of streptococcus vaccines; are all direct evidence of the infectious nature of this herpes. It is therefore a step toward proving the infectious origin of herpes simplex, and another step in the direction of showing the common origin of all herpes.

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4. Councilman, Mallory and Wright: Massachusetts State Board Reports, 1898.
5. Howard, W. T., Jr.: Am. Jour. Med. Sc., cxxv, 256.
6. Sunde: Deutsch. med. Wchnschr., 1913, xxxix.

The Care of Epileptics.—Thirteen states have colonies for epileptics. The total number of epileptics in the United States is 200,000. Of these only 3½ per cent. are properly cared for. Of 1,320 deaths in the Craig colony 513 were due to causes related to epilepsy. The average age at death was 30 years. In 600 necropsies about 60 per cent. showed gross brain lesions, but only a very few showed anything that might have been treated surgically. The most striking and frequent change was enlarged lateral ventricles and cystic or granular choroids.—Twenty-Second Annual Report of the Craig Colony for Epileptics, New York.

SOME OF THE SURGICAL ASPECTS OF PAINFUL BACK

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I wish to consider a condition equally as important as arthritis of the spine or sacro-iliac subluxation, although it is not so common. It is a condition more common than is generally supposed, and equally as potent a factor in the causation of sciatica, scoliosis and painful back. I refer to a class in which, in the past, operation has been performed for various supposed pelvic and abdominal conditions, also for cord tumors and Pott's disease, or they have been treated medically for lumbago, rheumatism and sciatica without relief.

The cause of pain and disability in these cases is an anatomic variation in the shape or size of the transverse process of the fifth lumbar vertebra, sometimes spoken of as the lumbar rib. A study of the roentgenograms of the lumbar and pelvic region shows that variation in the size and shape of the lumbar process occurs as frequently as anatomic variations in other parts of the body. Adams[1] reports a study of fifty consecutive cases in the Massachusetts General Hospital in which careful Roentgen examinations were made. Of these, forty-four cases showed bony defects in the sacrum or fourth and fifth lumbar vertebrae. Seven of these showed an anomaly of the fifth lumbar inferior articular process, and two others showed an enlargement of the transverse process.

In the majority of cases the condition is undoubtedly an acquirement during the years devoted to hard labor, especially in people following occupations requiring an unnatural posture, such as woodchoppers, automobile repairmen, washerwomen, sailors, etc. For this reason it is more common in middle adult life and among the male sex, although Kleinschmidt[2] reports a case in which the symptoms first appeared at the age of 5, and Adams[3] one case in a girl of 16 who was operated on. It is evident that while occupation is the chief contributing cause of enlargement of the fifth lumbar transverse process, it is not the only one. Meisenbach[4] reports a case of fracture with a large callous formation, as does Ferrall.[5] Infectious diseases, especially syphilis, are probably an etiologic factor. Denucé[6] reports a case of enlargement, as shown by the Roentgen ray, associated with sciatica, in which the patient recovered under antisyphilitic treatment.

The factors involved in the production of pain are apparently not the same in all cases. There are several possible ways in which the pain may be caused; one by impingement of the process on the ilium separating the sacro-iliac joint. The transverse process may act as a fulcrum separating the sacrolumbar joint. There is a third possibility, as indicated by the case of Adams,[3] in which an erosion of the ilium occurred as the result of constant friction. Irritation may set up a hyperplasia of the surrounding soft tissues which might include the nerve, or direct pressure on the nerve itself, as a cervical rib presses on the brachial plexus, illustrated by Kleinschmidt[2] and by my own case.

The roots of the fifth lumbar nerve originate from the spinal cord between the levels of the twelfth dorsal and first lumbar vertebrae. They enter into the formation of the cauda equina, and combining, take exit through the intervertebral foramina between the last lumbar vertebra and the sacrum, as the fifth lumbar nerve. The anterior primary division of the fifth nerve descends over the ala of the sacrum and divides into the anterior and posterior parts, which are joined by corresponding parts of the fourth lumbar nerve. The two resulting trunks are known as the lumbosacral cord. The anterior part contributes to the formation of the tibial and the posterior part to the peroneal nerve. The lumbosacral cord lies directly on the bones of the linea innominata, whereas the other portions of the sacral plexus lie on the pyriform muscle.

The fifth lumbar nerve, through the sacral plexus, supplies sensory fibers to the outer side of the leg, to the inner side of the dorsum of the foot, the back of the leg, the inner and outer sides of the great, second and third toes, and the inner side of the fourth toe. It sends motor fibers to the gluteus maximus, minimus and medius, the short head of the biceps, the semimembranosus and semitendinosus, the long head of the biceps, and a number of muscles on the back of the leg, the inner and outer sides of the front of the leg, and the inner side of the sole of the foot.

The remarkable fact has been noted (Oppenheim[7]) that in cases in which compression or other injury affects the sciatic in the pelvis, the paralytic symptoms are most marked in the peroneal nerve, presumably because its fibers lie directly on the bone.

In a careful search of the literature I have been able to find but twenty cases reported. Six of these patients were not operated on. Of these, four cases (6 and 14) were lost track of. The other two, including the case of Denucé,[6] mentioned above, and a case of Calve's[8] showed improvement. Fifteen patients were operated on with the results given in the accompanying tabulation.

In addition to these I wish to report three cases. One of the patients was operated on by Dr. P. B. Magnuson, and one by myself. The third patient refuses operation at the present time, but is still under observation. In Case 1 the history was furnished by Dr. Magnuson.

CASE 1.—*History.*—Mrs. S. W., a housewife, aged 35, white, was admitted to Wesley Hospital, Jan. 13, 1915. Her family history was negative, as was also the menstrual history; she had had no past illness. She had two children, both normal births.

Eight years ago, following the birth of her last child, the patient noticed pain on the left side over the left upper sacral region which radiated down over the sciatic nerve back of the left knee. This was exaggerated by bending over the washtub or lifting. This pain has continued in greater or less severity, depending on the labor performed, until the present date.

About six years ago the patient noticed a mild pain on the right side in the upper sacral region, but about 1½ or 2 inches further away from the spine than the pain on the left side, which greatly increased until at the present time she is unable to stand erect, leaning toward the left. Flexion is

1. Adams, Z. B.: The Relation of Bony Anomalies of the Lumbar and Sacral Spine to the Cause and Treatment of Scoliosis, Am. Jour. Orthop. Surg., 1914-1915, xii, 45.
2. Kleinschmidt, quoted by Denucé: Centralbl. f. Chir., 1912, xxxix, 645.
3. Adams, Z. B.: Am. Jour. Orthop. Surg., 1910-1911, viii, 299.
4. Meisenbach, Roland, in discussion of Fassett, F. J.: Late Results of Excision of the Transverse Process of the Fifth Lumbar Vertebra, THE JOURNAL A. M. A., Nov. 20, 1915, p. 1775.
5. Ferrall, O.: An Anatomic Explanation of Many Cases of Low Backache and Sciatica, New Orleans Med. and Surg. Jour., 1914-1915, lxvii, 608.
6. Denucé: Rev. d'orthop., December, 1913, p. 531.
7. Oppenheim: Text Book of Nervous Diseases, i, 461.
8. Calve: Orthop. et tuberc. chir., 1914, i, 376.

limited toward the right; flexion forward relieves the pain somewhat on the right side, but increases it on the left side. There is no pain radiating down the sciatic nerve on the right side. It is constant and continuous in one spot. Roentgenoscopy reveals a long, lateral process on the fifth lumbar vertebra on the right side impinging against the crest of the ilium at the point which corresponds to the area of the intestines and the seat of pain on the right.

The patient has spent the last six months in bed. The back is flat in the lumbar region, and there is some rotation of the spine toward the left.

Operation and Result.—The patient was operated on, Jan. 21, 1915. A longitudinal semilunar incision with the convexity toward the right was made from the spine. The lumbar muscles were pulled aside, and the fifth lumbar lateral process was exposed deep down under the muscles. An attempt was made to introduce a periosteotome between this process and the ilium, which was unsuccessful. The process impinged and apparently was adherent to the crest of the ilium. With a Fenger dissector bent under the process at the base, a thin bladed chisel was driven down through it transversely. It was then grasped with an 8 inch forceps and pulled out. The left sacro-iliac joint was then exposed, the ligaments cut, and with a lever this joint was pried in such a way as to pull the sacrum back and pry the ilium forward, after which the ligaments were sutured and the wound closed.

The patient remained in bed, lying on her face or side, for six weeks, and according to her statement she had less pain following the operation than she had had at any time for the last six years. At the end of six weeks a straight, front laced corset with heavy band and buckle around the hips was applied, and the patient was allowed to stand on her feet at the end of eight weeks. She went home during the ninth week, and when she was last seen by the operator, about five months after leaving the hospital, she had gained 20 pounds in weight, was doing her own housework, including the washing, said she had not had any pain in her back, that she was no longer nervous as she had been before the operation, and from her own statement was completely cured of her trouble.

CASE 2.—*History.*—H. M., man, referred for operation by Dr. M. T. Goldstine, entered my service at Wesley Memorial Hospital, Aug. 4, 1915. He was by occupation a butcher, aged 37, married. Family and past history were negative.

For six months previous to entering the hospital the patient had complained of aching pain over the right hip and right lower lumbar region. The pain gradually increased in severity until for a period of six weeks before entering the hospital he was unable to assume an upright position. At this time the pain radiated downward and into the peroneal group of muscles. He consulted physicians who treated him for arthritis and lumbago without any improvement. Even under immobilization the condition became worse. Physical examination showed a well developed man of about 170 pounds. He was unable to stand erect; there was marked lateral curvature of the spine convex to the right, slight atrophy of the gluteal muscles, and marked atrophy of the peroneal group. There was tenderness just above the right sacro-iliac joint, and rigidity of the lower vertebrae.

The head, neck, chest and abdomen were negative. The right knee jerk was exaggerated, the left normal, other reflexes normal. There was tenderness over the peroneal muscles of the right leg.

The laboratory findings, blood, urine and Wassermann test were negative. A roentenogram showed a large, bifid, transverse process on the left side of the fifth lumbar vertebra. The right transverse process was a straight prolongation, pointing outward and downward, impinging on the sacro-iliac articulation.

Operation and Result.—A curved incision was made over the lower lumbar and sacral region to the right of the median line. The lumbar muscles were split along the outer edge by blunt dissection and the transverse processes of the fourth and fifth lumbar vertebra exposed. A curved periosteotome was used to free the anterior surface of the process, pressing the nerve trunk gently out of the field. During this maneuver one marked contracture of the leg occurred, showing pressure on the nerve. The instrument was then pressed up tightly against the spine and placed in the hands of an assistant with instructions to hold tightly against the process, while with a hammer and chisel the process was removed.

There was some separation of the sacro-iliac joint, which was curetted to obtain bony ankylosis. The incision was closed in the usual manner.

Although it was anticipated that the pain might be more severe for a few days after the operation, such was not the case. The following day the patient stated that the pain was gone. Recovery was uninterrupted. A plaster cast was applied for a couple of weeks after the patient got up, padded and cut in such a manner as to have a tendency to straighten the spine.

Within three months the patient had returned to his usual occupation, was absolutely free from pain, and had assumed his characteristic military attitude.

CASE 3.—*History.*—S. M., man, aged 42, single, a stationary engineer, was sent in to my service at Wesley Memorial Hospital by a physician who had diagnosed Pott's disease. The family and past history were negative.

About three months before entering the hospital the patient had what he called "a stitch in the back." He rested for a couple of weeks and was then able to return to work. He was working in an artificial ice plant at the time. Some weeks later he put in an extra hard day's work when other men were on a holiday. From then on, pain was constant and the back seemed to be curved.

Physical examination was negative except for a slight curvature of the spine, marked tenderness above the sacro-iliac joint on the right side, and some limitation of motion, although there was no rigidity of the spine.

RESULTS OF OPERATION

Author	Publication	No. of Cases	No. of Operations	Results
Adams	Am. Jour. Orthop. Surg., 1910-1911, viii, 299.	1	1	Perfect
Kleinschmidt	Zentralbl. f. Chir., 1912, xxxix, 645	1	1	Fair
Blanchard and Parker	Am. Jour. Orthop. Surg., xiii, No. 2	1	1	Perfect
Fassett	THE JOURNAL, Nov. 20, 1915, p. 1775	3	5	Good
Henderson	THE JOURNAL, Nov. 20, 1915, p. 1775; Am. Jour. Orthop. Surg., 1914-1915, xii, 54.	3	3	1 poor; 1 good; 1 too recent to report
Ryerson	THE JOURNAL, Nov. 20, 1915, p. 1775; ibid., Jan. 2, 1915, p. 24.	2	1 resection; 1 Albee operation to prevent stooping forward	Good
Lord	THE JOURNAL, Nov. 20, 1915, p. 1775	1	1	Good Good
Reilly	Am. Jour. Orthop. Surg., 1914-1915, xii, 54.	1	1	Perfect
Meisenbach	THE JOURNAL, Nov. 20, 1915, p. 1775	1	Old fracture with callus removed by saw	Good
Goldthwaite	Boston Med. and Surg. Jour., 1911, clxiv, 365.	1	Process not removed; laminectomy for cauda equina tumor	Poor

The laboratory findings were negative. The Roentgen ray showed a large transverse process of the fifth lumbar vertebra.

The patient refused operation, and therefore was put at rest. He improved sufficiently to return to work, but is not free from pain.

25 East Washington Street.

CAROTID TUMOR AND ANEURYSM OF THE INTERNAL CAROTID

REPORTS OF CASES

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AND
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The common carotid has been ligated many times, and the reason for reporting these cases is not that this operation was performed, but because the two conditions for which it was ligated are rare.

Case 1.—A young woman, aged 16, had, on the right side of her neck, a hard lump, deeply seated, and about opposite the hyoid bone. It presented just in front of the anterior margin of the sternocleidomastoid muscle. It was slightly movable from side to side, but not movable in the vertical direction. Its position was so deep that it seemed to be in very close relationship to the transverse processes of the cervical vertebrae. The patient had suffered no inconvenience from the mass; there were no symptoms, and the reason she came for operation was the presence of a growing lump in her neck. Examination showed no evidence of pressure on either the pneumogastric, hypoglossal or recurrent laryngeal nerves. The lump was single, and the most careful palpation failed to reveal the presence of other masses in the neck. Because it was so firm, so fixed, single, and so deeply seated, it was thought to be a sarcoma; but a diagnosis of carotid tumor was not made before operation. An incision was made along the anterior margin of the sternomastoid muscle, and the lump isolated. It was found to be firm in consistency, not attached to the vertebrae, and after careful dissection, it was seen that the common carotid artery tunneled the growth. The internal jugular vein was firmly incorporated in the mass, but the pneumogastric nerve was not seen. The growth could not be removed without the removal of the entire carotid sheath; so that the common carotid artery and the internal jugular vein were ligated above and below the growth, and the mass lifted out. Almost immediately after the proximal ligature was applied, the anesthetist noticed a marked change in the character of the pulse. Up until this time, the patient had been taking a quiet anesthetic with a good pulse. The pulse immediately became very fast, but was still regular. The operation was hastily concluded. The wound was sutured without drainage, and the patient returned to bed with a pulse around 160. The pulse did not improve, continued rapid, and indeed, at times, was above 180. It was regular, however, and of fair volume. This rapid pulse continued four days, but during this time, the appearance of the patient was good. In spite of the rapid pulse, she had very little discomfort, no dyspnea, and no cyanosis. The only treatment during this time was an ice bag over the heart, and hypodermic doses of morphin. After four days of this rapid pulse, the patient was given strychnin nitrate, 1/30 grain hypodermically. Within a few hours from the beginning of the administration of the strychnin, the pulse rapidly improved, and on the morning of the fifth day was 100. This patient made an otherwise uninterrupted recovery, and recently, after a lapse of nearly five years, returned to the hospital with a chronic appendicitis, for which the appendix was removed. At this time, there was no evidence of recurrence.

Carotid tumors are seldom reported in the literature. Frazier[1] reports sixty instances collected from the literature; twenty-nine of these cases were reported by Keen and Funke,[2] and thirty-one by Callison and MacKenty.[3] Of these sixty cases, five were found at necropsy. Graham[4] reported that he found thirty-five cases with thirty-four complete case reports, and added two of his own, which made thirty-six complete reports. Of these thirty-six, all three carotids were tied twenty-two times, the external carotid only five times. The tumor was removed without ligation seven times. There were evidences of vagus disturbances six times. The hypoglossal nerve was cut eight times. Hemiplegia occurred five times, with one death. There was recurrence in four cases, and an immediate mortality of six. There was one cerebral hemorrhage with recovery. Two cases of bilateral carotid tumors have been reported. Since the foregoing reports, five additional cases have been reported, which, with the case just narrated, bring the total up to sixty-six.

Hertzger[5] gives a full report of the pathology. These tumors usually have a history of slow growth. They are definitely encapsulated, noninfiltrating, do not return after complete removal, and give rise to no symptoms other than deformity. Later on, however, as the tumor slowly increases in size, there may be many symptoms of pressure; interference with the recurrent laryngeal, hypoglossal and pneumogastric nerves, and pressure on the larynx. Pathologists report these tumors either as endothelioma, sarcoma or, more correctly, perithelioma. It is usually impossible to dissect them away from the carotid vessels, and if the entire tumor is not removed they usually recur. In the seven cases removed without ligation, in Graham's list, four recurred. These tumors vary somewhat in location. The tumor is usually found at the bifurcation of the common carotid. In its growth it usually involves all three carotids in its mass. Sometimes, however, the growth is entirely downward from the bifurcation, and in the latter group this case belongs. Complete removal is always hazardous because of the accidents which follow ligation of the common carotid, and because the tenth nerve is often so incorporated into the mass that it cannot be seen as a separate tissue, and is therefore destroyed by ligation.

The carotid body or gland, sometimes called the ganglion intercaroticum, was first described by Haller in 1743. It contains many nerve fibers and some ganglion cells, which led to the supposition that it belongs to the sympathetic nervous system. The body is related to the chromaffin system, and experimental work shows that its function is not important nor even essential. These tumors are usually mistaken for enlarged lymph nodes or lymphosarcoma. They grow very slowly and usually do not attain excessive size. Several of the cases reported were the size of a hen's egg, but most of the tumors were much smaller. The close relationship of the mass to the carotid artery makes its differentiation from aneurysm at times difficult. There is occasionally some vasomotor disturbance, irregular flushing of the face, and moderate exophthalmos. In most of the cases reported the diagnosis was not made until after removal. It is a disease which usually begins in the young, but no case has been reported before the eighteenth year. In the sixty cases, nineteen occurred after 40 years of age. Most surgeons have advised operating on these tumors only when they

1. Frazier: Progr. Med., March, 1914.

2. Funke: South. Med. Jour., 1914, vii, 554.
3. Callison and MacKenty: Ann. Surg., 1913, lviii, No. 6.
4. Graham: Cleveland Med. Jour., 1913, xii.
5. Hertzger: Treatise on Tumors.

are seen early in their growth. Later on, when they have reached considerable size, and have become widely attached, operation becomes much more difficult, with a high immediate mortality.

CASE 2.—Jan. 11, 1915, a woman, aged 41, came into our care who was complaining of a mass in her throat, of gradually increasing dyspnea, very great shortness of breath on exertion, some stridor, of a persistent and irritating cough, and considerable difficulty in swallowing. On examination, there was no external evidence of a mass, but there projected into the pharynx, behind the posterior pillar of the tonsil, a mass whose surface was smooth, very elastic and tight on palpation, and pulsating. The pulsation was apparently expansile. Bimanual examination with one finger in the pharynx disclosed a pulsating mass which could be compressed between the fingers, so that its bulk was considerably lessened. On pressure, there was a very loud bruit when the bell of the stethoscope was placed just behind the jaw and below the ear. If the carotid were grasped between the thumb and finger through the sternomastoid muscle (Rouge's method), the pulsation in the mass disappeared, and by pressing on the mass with the finger in the pharynx, it largely disappeared. The same disappearance of bruit and lessening in size of mass could be demonstrated by compressing the carotid arteries between the finger and the transverse processes of the cervical vertebrae. The patient complained a great deal of a roaring sound, which was very noticeable when she slept on that side. This roaring was especially exaggerated when she was exercising. She was seen by a number of surgeons, and various diagnoses were made. The diagnoses narrowed themselves down to three: aneurysm of the internal carotid, tumor and cold abscess. Roentgenoscopy of the cervical region revealed a very slight erosion of the transverse processes of the third and fourth cervical vertebrae. There was no evidence of necrosis in any of the bodies of the vertebrae. An exploratory incision was made high up in the neck, just behind the angle of the jaw, and the common carotid and its bifurcation exposed. The common carotid was normal, and the external carotid easily uncovered. The internal carotid, as such, could not be found. Its position was occupied by an oval pulsating mass which began where the external carotid came off from the common carotid. This mass was only slightly larger than the artery at first, but gradually became larger as it ascended into the neck. Compression on the common carotid was made, and with the finger in the pharynx, the pulsation disappeared, and compression caused the disappearance of the mass. As soon as compression was removed from the artery, the pulsating mass immediately reappeared. As consent had not been given for so serious an operative procedure as the ligation of the common carotid, the wound was closed, and the patient convalesced uneventfully. The gravity of her condition was explained to her family and to herself, and ten days later, the carotid was again exposed and ligature applied. This patient made an absolutely uneventful recovery. None of the usual phenomena following ligature of the carotid appeared. Great care was taken at the time not to injure the internal jugular vein, and especially not to injure the pneumogastric nerve. There was no weakness in the opposite side of the body, no paralysis of any kind, no disturbance of cerebration, and no evidence of pneumogastric injury. The roaring immediately disappeared, pulsation in the mass ceased, and Jan. 2, 1916, one year after ligation, the mass is still present, although slightly smaller, without pulsation; and symptoms of pressure, cough, shortness of breath and difficulty in swallowing have largely disappeared.

Aneurysms of the internal carotid artery are divided anatomically into intracranial and extracranial aneurysms. Intracranial carotid aneurysms are reported with comparative frequency. In 1,000 ligations of the common carotid, 113 were for pulsating exophthalmos. Pulsating exophthalmos is usually caused by an arteriovenous aneurysm between the cavernous sinus and the internal carotid, and this condition is usually brought about by trauma to the skull.

Extracranial internal carotid aneurysms are very rare. Crisp mentions only two in a collection of 551 aneurysms. In Matas'[6] collection of aneurysms treated after this method by American and foreign surgeons, there is not a single case of internal carotid aneurysm of the extracranial variety. Herzen records it as occurring only once in his cases. Monod and Vanverts in their collective cases mention one case in which restorative endo-aneurysmorrhaphy was attempted and failed because of secondary hemorrhage. The most complete report is one by Bobbio,[7] who reports eighteen cases of aneurysm of the internal carotid which he had been able to find in the literature. In these cases the common carotid was tied eleven times with five deaths. It is fortunate that these aneurysms are rare, according to Matas, because when they do occur they are often mistaken for other conditions with fatal results. Thus, in 11 extracranial aneurysms collected by Werner, only six were correctly diagnosed before treatment. They are often mistaken for growths projecting into the pharnyx, or for abscess near the pharnyx. Matas divides these aneurysms etiologically into three groups: traumatic or false aneurysms, erosion aneurysms, and true arteriosclerotic aneurysms.

The common carotid artery was first tied for aneurysm by Sir Astley Cooper in 1805 at Guy's Hospital, and the patient died on the nineteenth day. The same surgeon repeated the operation in 1808 with success. The common carotid had previously been tied for hemorrhage unsuccessfully by Mr. Abernathy in 1795, and successfully by Mr. Fleming in 1803. Since that time the common carotid has been tied repeatedly and the average mortality has been about 27 per cent. One of the most remarkable reports showing the advantage of band over ligation was a case reported by Charles H. Mayo[8] at the American Surgical Association in Washington in 1910. This patient was a woman, aged 56, who had an arteriovenous intracranial aneurysm, presumably of the internal carotid and cavernous sinus, with frightful head noises and exophthalmos. She was operated on under local anesthesia, and a metal band made of a little clip of block tin was applied and tightened. While the wound was being closed the patient said that the light was going out. The wound was opened and the band loosened until vision returned. Six months later the band was still in situ, and the patient was much improved. These bands are soft enough to be compressed digitally and yet thick enough to remain closed without clips. A long piece of metal with the end turned in the shape of an aneurysm needle is slipped around the artery and the handle part cut away. This makes a very convenient method of handling the clip.

Matas advises the following routine, although he has had no personal experience with aneurysms of the internal carotid: First, the common carotid should be tied, or preferably partially obliterated by the Halsted band, and later on, completely closed. If the aneurysm should relapse, extirpation might be attempted, but this would be an extremely hazardous undertaking, and hardly advisable. A preferable procedure would be an obliterative endo-aneurysmorrhaphy, provided it were possible to secure the upper pole of the sac below the base of the skull. In order to reach the sac, temporary resection of the lower jaw would have to be done. In these cases endo-aneurysmorrhaphy should be limited to

6. Matas, in Keen's Surgery, 1909, v.
7. Bobbio: Policlinico, Rome, Februry, 1906.
8. Mayo, C. H.: Tr. Am. Surg. Assn., 1910, p. 52.

internal suturing of the orifices of the sac and occlusion of the sac by packing. The chief risk of total extirpation would be uncontrollable bleeding from the dilated internal jugular at this point, and destruction of the lower cranial nerves at their exit from the skull. Most operators prefer ligation of the common carotid to ligation of the internal carotid in the treatment of these aneurysms; and in this case ligation of the internal carotid was not possible because the sac of the aneurysm began at the bifurcation. The internal carotid was first ligated by Gurdon Buck of New York, reported in 1850, and in this connection it might be interesting to state what is already known to most of us, that the first ligature applied on the proximal side of an aneurysm was done by Dominique Anel, Jan. 30, 1710, who ligated the brachial artery for aneurysm with recovery. The most violent opposition was encountered, and as an example of the skill of detractors, they claimed, first, that it was not the brachial artery that was tied; secondly, that the ligature did not cure the aneurysm, and thirdly, that cure was by lucky chance only. The old operation had been practiced in small aneurysms previous to this, which was to open the sac and ligate all bleeding points within the sac. Morel attempted this operation in an aneurysm of the carotid in 1687, and lost his patient on the table from hemorrhage. It was interesting to note in looking up the history of aneurysms that the femoral artery was not first tied for popliteal aneurysm by John Hunter, Dec. 12, 1785, but that Desault had performed the same operation successfully January 22 of that year.[9]

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THE CHARCOT-MARIE-TOOTH TYPE OF PROGRESSIVE NEUROMUSCULAR ATROPHY

WITH A REPORT OF TWO CASES *

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Charcot and Marie,[1] in a joint contribution in 1886, first described this type of atrophy, which they considered in the nature of a dystrophy. Tooth[2] in England in the same year described it independently, practically giving this affection a similar summary. In 1889, however, Hoffman discovered a neurotic atrophy in the peroneal nerves, which immediately removed the affection from the category of the dystrophies and placed it in the class of primary neural degenerations. Since these notable contributions, American neurologists, notably Sachs[3] and Spiller,[4] have described cases confirming the clinical syndrome of this condition. The literature on the subject, although not very voluminous, is apparently divided among American, English and French authors, with an occasional case reported by Italian observers. German observers, in a number of reported cases, have a tendency to include this distinct neurologic condition among the spinal atrophies, which Maslianka[5] deprecates very much, as not in accord with a true conception of the pathology of the disease.

Although textbooks and monographs dwell on the rarity of the affection, Maslianka refutes the idea that it is exceptional in occurrence. He believes that it is a fairly common disease, and that a great many more cases would be found if our clinical acumen was somewhat sharpened. Either his contentions are correct or the disease is rare in this country.

No known cause has been formulated. A number of observers state that their cases followed a febrile disturbance. One of my cases followed such a course. Gowers[6] would class this affection among the abiotrophies, that is, a tendency for nervous tissue to suffer early decay and death.

The pathology of the disease was in a chaotic state following Charcot and Marie's monograph, as it was then thought to be a dystrophy; but Hoffman, Bernhardt, Siemerling, Sainton,[7] Déjerine and Armand-Delille, in necropsy material and from a study of the recorded cases, came to the conclusion that the lesions consisted of a degeneration of the muscles, nerves and posterior columns of the spinal cord, involving the sensory and motor sides of the nerves peripherally and centrally.

Although the hereditary factor is commented on strongly by most authors, isolated cases have been described in which heredity played no rôle in the disease. My cases lacked this distinguishing feature.

Occurring in families in which the hereditary factor is strong, brothers and sisters are equally affected; but if we are to include isolated cases, we find that males are five times more susceptible than females.

The extreme age limits of described cases are 2 and 39 years. Most cases have had their onset between the tenth and twentieth year. My cases commenced at 16 and 20 years, respectively.

CLINICAL COURSE

The onset is slow, although in one of my cases it was rather rapid. The patient may not appreciate the atrophy until function of the limbs is interfered with. Most of the cases reported in the literature mention the legs as first affected; then after a variable time, lasting from several months to several years, the upper extremities become involved. It also may remain permanently localized either to the upper or lower extremities, although this is unusual. My cases, of three to six years' duration, respectively, have so far selected the lower extremities. When involving the upper extremities, the thenar, hypothenar and interosseus muscle bundles first show atrophy; then follow the flexors and extensors. In the lower extremities, the peroneal group and antero-external part of the foot first show atrophy and diminution in muscle volume.

9. In addition to the references already given, the following will be found of interest:
Schmidt: Beitr. z. klin. Chir., 1913, lxxxviii, No. 2.
Balfour and Wildner: Surg., Gynec. and Obst., 1914, xviii, 803.
Levings: Wisconsin Med. Jour., 1914, xiii, 17.
Da Costa: New York Med. Jour., xciv, 253.
Frazier: Progr. Med., March, 1915.
Collier: Surg., Gynec. and Obst., April, 1915.
Halsted, W. S.: The Results of the Complete and Incomplete Occlusion of the Abdominal and Thoracic Aortas by Metal Bands, THE JOURNAL A. M. A., Dec. 29, 1906, p. 2147; Jour. Exper. Med., 1909, xi; No. 2; Ann. Surg., 1913, lviii, 183.
Cunningham, A. R. T.: Report of a Case of Gradual Occlusion of the Common Carotid Artery in the Treatment of Pulsating Exophthalmos, THE JOURNAL A. M. A., Jan. 31, 1914, p. 373.

* Patients presented before the Harlem Medical Society, March 1, 1916.

* From the Hospital for Deformities and Joint Diseases, Service of Dr. Henry W. Frauenthal.

1. Charcot and Marie: Rev. de méd., 1886.
2. Tooth: Brain, x, 243.
3. Sachs: New York Med. Jour., 1888.
4. Spiller: Osler's Modern Medicine.
5. Maslianka: Thèse contribution à l'étude clinique de l'amyotrophie-Charcot-Marie.
6. Gowers: Text Book of Nervous Diseases.
7. Sainton, M. Paul: Thèse de Paris, 1899.

A distinguishing feature of this atrophy is its symmetry and its distal character. The proximal portions of the limbs are well preserved and show their normal contour, in striking contrast to the wasted distal portions.

As a result of the atrophy, the extensors give way, thus giving us various degrees of claw hand, foot drop and equinovarus deformities. The atrophy and paralysis are absolutely parallel, which condition naturally influences the gait of the patient or the use of the hands. In moderate grades of wasting, there is very little interference with function of the limbs, although the gait may readily show impairment, or the hands loss of power for finer movements. In extreme grades of wasting, total helplessness supervenes. Bony atrophy is absent and constitutes a singular feature of the cases. Face, chest and trunk muscles are normal, and remain unaffected throughout the course of the disease.

Fibrillary contraction constitutes a persistent feature of the affection. It exists only in atrophying muscles, and stops when they are completely wasted. My cases did not show this markedly, but the extreme atrophy present in both cases readily explains its absence.

The reflexes in most cases reported are abolished, although Maslianka insists that they are variable, either normal, diminished, lost or increased. One of my cases showed normal patellar reflexes, while the other case showed them markedly exaggerated. The last condition may indicate lateral tract involvement, as particularly emphasized by Spiller. Ankle clonus has been described in one case. The cremasteric abdominal and upper arm reflexes have been constantly reported as normal.

Electrical reactions naturally depend on the grade of atrophy. In extreme atrophy, there is no response either to faradism or galvanism. My cases showed an almost insignificant response in both tibialis anticus muscles with the strongest galvanic current.

The sensibility is not very much disturbed subjectively. Forms of cramps and paresthesias have been described, but violent and continuous pain is not a feature of the disease. In contrast to these accepted observations, one of my patients developed such severe pain in one leg that she applied for admission to a hospital where a diagnosis of osteomyelitis was made and an amputation performed below the knee. A small tarsal bone was subsequently removed from the other foot, but without relief to the patient in her remaining leg. Objective sensibility is not altered. The muscular sense is intact, and hyperesthesia is rare. Vasomotor disturbances are, however, a marked feature. The limbs are cold, cyanotic and erythematous, and at times show violaceous patches. One of my cases showed this in striking fashion.

Sphincteric troubles are absent, and evidently do not belong to this malady. Organs of sense are intact and show no special disturbances. The psychic state is good and the general health is remarkably well preserved. The evolution of the disease is so slow and encompasses so long a period that it is quite compatible with long life and preservation of function. An intercurrent illness usually closes the scene.

CASE REPORTS

CASE 1.—E. C., woman, aged 26, Russian, is the sixth child in a family of ten; seven sisters and brothers are dead of various causes. The parents are living and well. Two brothers are in good health. There are no similar conditions in any member of the family. The patient had the usual infantile disturbances, but is quite sure that she never had any acute or serious illness. She is under the impression that her legs have always been thin, but she was able to use them with perfect freedom up to the age of 20, when she commenced to suffer a good deal of pain in both feet. This was followed by gradually increasing weakness in both legs. The patient at about this time observed the atrophy, which progressed gradually for about five years, then suddenly stopped, and for the past year has been practically stationary. The pain in both feet persisted from the onset of the malady, so much, in fact, that it became quite unbearable, necessitating her admission to a hospital in this city. A diagnosis of osteomyelitis (?) was made and an amputation below the knee performed on the left leg. The pain persisting in the other leg, a small tarsal bone was next removed. These operative procedures did not improve her condition, and at present she gets about fairly well with an artificial limb and brace.

The general physical and laboratory examinations are uniformly negative. The upper extremities show no abnormalities, either on inspection or with regard to function. The right leg and foot below the knee joint reveal an extreme atrophy which contrasts strangely with the well preserved contour of the thigh. This emphasizes the distal character of the atrophy and the preservation of the proximal part of the limb. There are no objective sensory disturbances elicited. The limb has a marked cyanotic hue and is covered with irregular violaceous patches. Foot drop and equinovarus are present and quite evident on account of extreme shrinking of the foot. In fact, it is extremely difficult, except by a liberal stretch of the imagination, to associate this small atrophic infantile foot with an adult. The reflexes are present on both sides and equally exaggerated, the response in the stump of the amputated leg appearing as a grotesque and startling phenomenon. Under extreme galvanic stimulation, we get an insignificant response in the tibialis anticus. All other muscles fail to respond with the strongest currents. Muscle fibrillation is absent. The patient's general health is excellent. She manages to get about fairly well, and is in no way depressed in spite of her distressing condition.

CASE 2.—J. B., man, aged 19, loom fixer by occupation, had the usual diseases of childhood. He has never had any acute illness except that in connection with his present affection. His habits are good. He does not drink, and is a moderate user of tobacco. All venereal infection is denied. The family history has no bearing on the patient's present complaint, nor are there any other members of the family similarly affected. The patient, as heretofore noted, was perfectly well up to the age of 16, when he had a febrile illness of unknown etiology and classification lasting three days. He recovered quickly and seemed quite well for two months, when the present trouble commenced. This manifested itself by an inability to walk properly. There was loss of power in both legs and feet which progressively became worse for one year; then the condition remained stationary and has remained so ever since, that is, for a period of two years. At no time were there any bladder, rectal or sensory disturbances.

The general physical examination reveals no abnormalities, and the laboratory tests are uniformly negative. The upper extremities show no involvement. Examination of the legs shows an evident atrophy which has involved both feet. Here we also note the distal character of the atrophy, the proximal portions of the limbs, that is, the thighs, are not involved and show a normal fleshy contour. There are absolutely no sensory disturbances to be elicited, either subjectively or objectively. A double foot drop is quite evident, and the gait, which is quite good, is suggestive of a "steppage." There is marked vasomotor disturbance, mottled areas of erythema and cyanosis being present in both limbs. The patellar and Achilles reflexes are normal on both sides, and there is an equal response. With the strongest galvanic stimulation, a very feeble "wormlike" response is elicited in the tibialis anticus of both sides; all other muscles fail to respond with the strongest faradic or galvanic stimulation. The general health is excellent and the mental state has always been good.

CONCLUSION

It is hoped that this study will stimulate workers in the field of neurology to recognize and isolate these neural disturbances as belonging to a distinct clinical entity and not to class them with the dystrophies with which they are often confounded.[8]

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STREPTOTHRIX IN BRONCHOPNEUMONIA OF RATS SIMILAR TO THAT IN RAT-BITE FEVER

A PRELIMINARY REPORT *

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Bronchopneumonia is frequent in the white rat, and occurs also in the gray rat. In the course of a study of this condition, especially as it occurs in the white rat, a streptothrix was found which may be of interest in connection with rat-bite fever in man.

Sixty white rats showing acute or chronic bronchopneumonia have been examined. A long, fine, straight or wavy filamentous organism was observed in smear preparations or by dark field illumination in fifty-six. Three lesions in which no organisms were seen were chronic. The organisms are most abundant in acute lesions. It is a gram-negative organism and stains fairly distinctly with carbol-gentian-violet and the Giemsa stain. It is distinguished from cilia by its greater length, more pointed ends and its occasional wavy form. In the dark field I have observed once or twice a slow wormlike motion, and one organism showed a corkscrew motion. They are barely visible in the tissues stained with methylene blue, but are distinct in tissues impregnated with silver nitrate according to Levaditi's method. Here, they appear more wavy and more fragmented than in other preparations. These organisms were not observed in twenty-four normal rats.

A streptothrix resembling these organisms was cultivated from twenty rats, and isolated in pure culture thirteen times. Cultures from thirty-three rats remained sterile. Why successful cultures were obtained from some rats and not from others is undetermined. The character of the lesion does not seem to make any difference. Successful cultures were more frequent in the case of sick rats and from lesions in which other bacteria were present. The other organisms isolated from twenty-two rats were *Streptococcus viridans* and *pyogenes*, pneumococcus, staphylococcus, diphtheroid bacilli, anaerobic spirilla, and a profusely growing gram-negative bacillus which was probably a contamination. Seven of these were isolated from cultures in which the streptothrix did not grow. Successful cultures were grown on human blood agar or ascites-goat-blood-agar. The various mediums for growing spirochetes were used, but no spirochetes were cultivated. This streptothrix is a faculative anaerobe, growing best at 37 C. (98.6 F.) Slight growth appears at room temperature after several days' incubation. Growth generally appears in from forty-eight to seventy-two hours as discrete, colorless or grayish pin-point colonies. At first they appear dull, but later become glistening and increase slightly in size. The medium is not changed. The growth in the fluid of condensation and in ascites broth is white and flocculent, the medium remaining clear. The growth on Loeffler's blood serum is similar to the growth on blood agar, but does not always occur. There is no growth on plain and dextrose agar, ascites dextrose agar, in plain and dextrose broth or in milk.

In cultures the organism is slender, branching, straight or wavy, filamentous, varying greatly in length and showing bacillus and coccuslike forms. True branching is seen in young cultures, but is not especially frequent. They often show spindle or irregular shaped swellings. Twisted and wavy forms are more frequent on solid mediums than in ascites broth, where they appear generally as long threads or chains of bacilli. They do not show a radial arrangement at the periphery of the colony. They stain with ordinary stains. They are gram-negative, except the swellings, and are not acid fast. The organism here is nonmotile.

An increase in opsonins and agglutinins for this organism has been observed in infected rats.

Young healthy rats injected intraperitoneally with cultures show acute lesions in the lungs. The organism has been isolated in pure culture from the heart's blood and lung.

This streptothrix appears to be the same as *Streptothrix muris ratti* isolated in pure culture from the blood of patients with rat-bite fever by Schottmüller[1] and Blake,[2] and seen in the blood during the paroxysms by Tileston.[3] Futaki[4] and his associates describe a motile spirochete in the skin and lymph node of two cases of rat-bite fever, but details of experiments and cultures are not available. Some of the spiral forms in my Levaditi specimens closely resemble the spirochetes shown in their drawing. Rats causing rat-bite fever have not been examined as far as known. I have examined twenty-eight wild rats, and found one infected. The lesions in the lung were the same as those observed in the white rats, and showed the same organism. As the trachea of infected rats is full of mucus containing large numbers of the organisms, it is readily seen that a bite from such a rat might be infectious.

8. In addition to the references already given, the following will be found of interest:
Pediatria, Naples, 1912, xx, 133.
Ponticaccia: Riv. ven. d. sc. med., 1912.
Souques: Icon. de la Salpêtrière, 1914, xxvii, 178.
Jour. Nerv. and Ment. Dis., 1915, p. 570.
Virchows Arch. f. path. Anat., cxxxii, 259.
Arch. f. Psychiatrie, xxxi, 105.

* From the Memorial Institute for Infectious Diseases.

1. Schottmüller: Dermat. Wchnschr., 1914, lviii, Suppl., p. 77.
2. Blake: Jour. Exper. Med., 1916, xxiii, 39.
3. Tileston, Wilder: The Etiology and Treatment of Rat-Bite Fever, THE JOURNAL A. M. A., April 1, 1916, p. 995.
4. Futaki: Jour. Exper. Med., 1916, xxiii, 249.

Tuberculosis in Madrid.—On the basis of a census of all known cases of tuberculosis in Madrid during the last four years, according to the *Siglo Medico*, Dr. Codina, at a recent meeting of the Academia de Medicina, stated that of the 1,300 streets in the city, over 79 per cent. had had one or more cases of tuberculosis, and over 26 per cent. of the houses sheltered tuberculous inmates on a given day, and over 60 per cent. had had one or more tuberculous inmates in the course of the four years. That is, over three fifths of the houses of Madrid have sheltered tuberculosis in the last few years, and there are fifty-two houses that have each had from eleven to thirty-one cases. He stated further that 92.69 per cent. of the tuberculous have less than a peseta —20 cents—a day to live on; 7.11 per cent. have from 1 to 2 pesetas, and only 0.2 per cent. as much as from 2 to 4 pesetas. Overcrowding and illiteracy are shown anew to be potent factors in tuberculosis; only 35.14 per cent. of the tuberculous in Madrid can read.

THE BACILLUS EPILEPTICUS *

THIRD REPORT

CHARLES A. L. REED, M.D.
CINCINNATI

In 1914 I affirmed[1] that constipation was a factor, and a very essential factor, in the causation of epilepsy. I have found that constipation, always present in the patients who came to me, was caused by mechanical disturbance or distortion of the intestines, and that when these conditions of the intestines were corrected by surgical means, the patients in a large number of instances were cured without other treatment, not only of their constipation, but very often of their epilepsy.

My increasing experience has confirmed the correctness of these views with respect to both the causation and the treatment of the disease. I was aware from the start, however, that, while the connection between constipation as the cause and epilepsy as the effect was obvious from the history of the cases, there had been given no adequate explanation or actual demonstration of the connecting link between the two conditions.

While this was true, a careful study of the symptomatology, as manifested in my cases, had early convinced me that this connecting link consisted in some form of infection.

Was the infection, however, restricted, as it seemed, to the intestinal canal? Were the bacteria in the intestines responsible for the evolution of toxins which, when absorbed, caused epilepsy? Were the ordinarily known organisms of the intestinal flora responsible for such toxins, or were the toxins elaborated by some special organism? Or was the offending organism, whether of the known flora or not, absorbed directly into the blood? And, after all, was the constipation which was present in all of my cases responsible for the enforced absorption, toxic or bacterial or both, into the circulation?

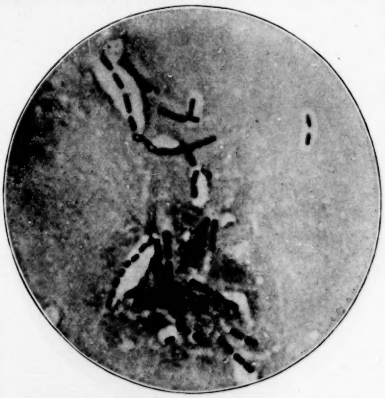

Fig. 1.—Bacillus epilepticus from the blood of an epileptic patient; (*a*) the isolated organism in the right upper quadrant is an early growth; (*b*) the remainder of the field is occupied chiefly with mature culture from agar-agar slant.

It was convictions such as I have expressed and questions such as I have just propounded that induced me to inaugurate investigations which have resulted in the isolation, cultivation and experimental study of an organism which, it would seem, according to the law of Koch, has a causal relation to epilepsy. I feel that it is important to place findings, as far as they have gone, and conclusions, as far as they have been reached, before the profession, that they may at least serve as the basis of further investigations, especially by those with large clinical and laboratory facilities at their disposal.

METHODS OF INVESTIGATION

The investigations, begun clinically by myself, were further developed by placing Dr. E. P. Hyatt in charge of the hematologic work of my laboratory. Investigations were made in the laboratory, in the hospitals with which I am connected, and in the Nursing Home for Epileptics. All patients were kept under strict observation. The experimental work was done at the last named institution, where the animals were kept under constant surveillance. All my patients afflicted with constipation, whether epileptics or not, on application at the office, were thoroughly examined, special attention being directed to Roentgen examination of the abdominal viscera, repeated analyses of the urine, and careful bacteriologic and other analytic examination of the blood. The blood was taken from a vein in the forearm under the usual aseptic precautions, from 1 to 2.5 c.c. being the amount ordinarily taken. This blood was examined on admission by direct smears and, later, by cultures. It was soon noticed that there was an organism, always the same organism, present in blood of epileptics, but that it was never present in the blood of nonepileptics. It was sometimes, although rarely, found in the direct smears; but the cultures showed that it was present in a majority of cases. Examination was also made of the contents of each colon that I removed. The contents of each vermiform appendix were similarly examined, as were the enlarged and indurated lymphatics of the mesocecum and the mesocolon. These glands were either removed with the large bowel or taken out in the course of some other operation and submitted to special examination. The result was that the organism which was being found so uniformly in the blood at the time of preliminary examination was found with equal uniformity in the contents of the cecum, in that of the appendix, and also in the lymphatic glands of the same patient at the time of operation. Similar investigations in nonepileptics were always negative. It was concluded, therefore, that the cecum of epileptics was the very constant habitat of the organism, that the lymph channels were the highways of its transit, and that the blood was its final destination. It was also noted in each of these cases that the cecum was very large, flabby and mobile, and that its dilatation with resulting attenuation of its walls was obviously the effect of stasis induced by retardative conditions further along.

These observations compelled the further conclusion that mechanical conditions of the intestines, more especially of the cecum, forced the absorption of the organisms, and that such absorption would not occur in the same degree, if at all, if these retardative conditions did not exist — a conclusion which is amply confirmed by both clinical observation and postoperative results.

* Read before the Medical Research Society of Cincinnati, April 6, 1916.

1. Reed, C. A. L.: Constipation and Epilepsy, Lancet-Clinic, July 25, 1914; The Probable Cause and Logical Treatment of Epilepsy, THE JOURNAL A. M. A., March 27, 1915, p. 1047.

THE BACILLUS EPILEPTICUS A SPORE-BEARING ORGANISM

A further study of the organism shows that it stains best with carbolfuchsin. Methyl blue may be employed. Gram's method also may be used, although it is less satisfactory than the others. These stains, when positive, reveal the organism. It is better, however, for reasons which shall become apparent, to stain at the same time for both the organism and for spores. For this purpose, Abbott's method is usually employed which, when positive, shows the organisms red and the spores blue. The result, however, so far as the direct smears are concerned, is usually negative. The occasional very positive findings and the desirability of having the early and conclusive information thus afforded, however, make it important always thus to examine the fresh blood.

Cultures are then made in either agar-agar or bouillon, although the organism will grow in other mediums. Incubation progresses most favorably at from 37 to 40 C. (98.6 to 104 F.). The growth is, however, more prompt at the latter temperature. The growths begin to manifest themselves from the second to the fifth day, and first show their presence by marked turbidity of the medium. A smear made early, as soon as this turbidity has become marked, shows a few organisms which may be recognized as short thick bacilli with blunt ends (Fig. 1 *a*). They are actively motile. The organism continues to grow, and when mature is very large, so large, indeed, that both from its size and other morphologic features, it is suggestive of a saprophyte which might easily be derived from nonsterile mediums (Fig. 1 *b*). This appearance was at first so impressive that it was accepted as conclusive, and our positive cultures were abandoned as probable contaminations. Our error, however, was fortunately detected when both the *organism and its spores were repeatedly detected in direct smears.* The sporulation becomes marked relatively to the age of the culture. It is first manifested by the appearance of a light area in the center of the older organisms. This light area grows until it practically fills the body of the bacillus. As the organism grows still older and the nutritive value of the medium becomes exhausted, the bacillus disappears, leaving behind it the now liberated light areas or spores (Fig. 2). This cycle of evolution varies from forty-eight hours to from ten to twelve days. The whole process often repeats itself several times in the same medium. If Abbott's spore-staining method is now employed, the smears from the cultures show the field to be almost entirely filled with oval blue spores, with only occasional red-stained bacilli in various stages of development. These findings are practically always positive in epileptics, and always negative in nonepileptics. It should be noted that the organisms are more abundant in the blood immediately preceding or at the moment of the seizures, although they may be secured at other times. They are less readily found in long interval cases. It follows, therefore, that the investigations are most readily conducted in institutions where the patients are under entire control.

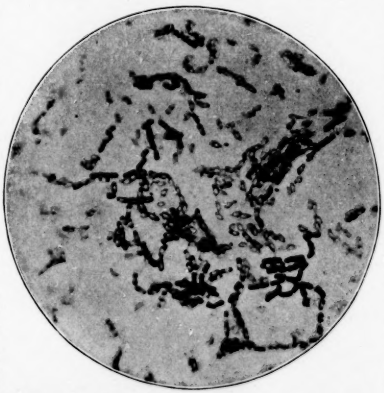

Fig. 2.—Bacillus epilepticus from human subject; old culture from agar slant, showing excessive spore formation.

EXPERIMENTAL STUDY OF THE ORGANISM

Experimental study of this organism has been made on rabbits by (*a*) intravenous inoculation, (*b*) intraperitoneal injection, and (*c*) administration by the alimentary canal.

Intravenous inoculation was practiced by injection into a rabbit through the marginal vein of one ear. A growth from an agar slant was suspended in 8 c.c. of physiologic salt solution. Of this suspension, 2 c.c. were injected at one time, followed at twenty-four hour intervals by from 1 to 1.5 c.c. similarly administered. On the second day, the rabbit was observed to act peculiarly, as if confused. The next day, it had a recognizable convulsion, followed by stupor. After this the convulsions were more frequent. These would come on suddenly. The animal would fall on its side, in a state of unconsciousness. As it fell, it would emit a peculiar sound described by one of the watchers as a "half cry, half choking sound." During the period of unconsciousness, which was complete, there was staring of the eyes, the head turned to one side, the muscles of the neck twitched, and there were alternate contraction and extension of all four of the legs and feet. This would last from three to five minutes, after which the rabbit would lie in a stupor for from fifteen to twenty minutes. Early in the course of the convulsions, the animal would appear normal in the interval between the last stupor and the next seizure. On the fourth day, a direct smear revealed the organism present in the blood (Fig. 3), while a hanging drop showed that it was highly motile. On the fifth day, however, the seizures became coalescent and the rabbit died in status epilepticus. Several repetitions of this experiment showed that the phenomena induced were essentially uniform in all cases, the variation in the time of the first onset and in intensity being relative to the magnitude of the dose and the frequency of its repetition. In certain instances in which small but repeated doses were given the convulsions did not appear for fourteen days or even longer.

Intraperitoneal injection was practiced to determine the toxicity of the cultures. This was done by injecting the peritoneal cavity of a large rabbit with about 8 c.c. of the suspension similar to that previously described. The animal almost at once became restless and moved about the cage constantly. In an hour, it became drowsy and lay quietly down on its side, unable to move. It died in this condition at the end of seven hours. Necropsy revealed absence of fluid from the peritoneum, which was not in the least inflamed. No

organisms were found in the blood. Death was therefore obviously due to simple absorption of toxins. This observation was subsequently confirmed by several repetitions.

Administration by the alimentary canal came about first quite accidentally. A rabbit which had had some of the bacillary suspension injected into the vein of the ear was put back into the cage with a rabbit which had had no such treatment. The inoculated rabbit speedily developed convulsions from which in due course it died. In the meantime, the other rabbit, the one which had not been injected, developed convulsions. The organism was found in the blood of this rabbit. After a period of about ten days, it, too, died in continuous convulsions. In accounting for the development of epilepsy in the second rabbit, it was remembered that it had licked the blood from the ear of its mate after the latter had been returned to the cage. This blood was the slight reflux from the vein and, of course, brought out with it some of the organisms, which in turn were carried into the alimentary canal of the second rabbit. This observation was an obvious demonstration that the organism reached the blood through the alimentary canal. It was further confirmed by the fact that rabbits developed epilepsy when confined in cages which were purposely kept foul with the fecal discharges of animals in which the alimentary canal had been infected with the organism. The animals which thus contracted the disease had taken food which had come in contact with the infected discharges. We have had no evidence of the hematogenous infection of the intestines in animals which had been subjected only to intravenous inoculation.

THE BACILLUS EPILEPTICUS AND NATURAL IMMUNITY

In one particular rabbit in which a twenty-four hour growth from an agar-agar slant had been intravenously injected as before described, convulsions typically epileptic soon developed. These increased in frequency and severity for the next two weeks. The organism was demonstrated in the blood. A little later, the seizures began to define a decrescendo in both frequency and severity into what seemed to be definite attacks of petit mal. The last of these occurred just a month after the beginning of the experiment. Since then the animal has had no sign of the disease. Repeated examinations have failed to show the organism in the blood. This spontaneous recovery has been observed in several other rabbits.

This demonstrated triumph of natural immunity over the organism in rabbits throws an illuminating ray on similar results following operation in many of my cases. To understand this fact, it is important, however, first to remember that in these instances of natural immunization in rabbits, the initial and only infection was effected by intravenous injection. In other words, there was no focus like a large flabby and infected cecum to act as a fountain head for continued systemic invasion. As a result, when the natural immunizing power of the animal had once prevailed over the invaders, the war was over. There were no fresh reserves to take the place of the vanquished, and recovery resulted. The probabilities are that if a preliminary focus had been established in the alimentary canal of these animals, the result would have been different. As a matter of fact, all animals infected through the alimentary canal have died of epileptic seizures. This principle is further illustrated in the postoperative records of certain of my cases in which, following surgical restoration of the normal fecal current and without other treatment, there was a continuance of the convulsions for some time. Then the seizures began to grow lighter and fewer until there was a complete transition from the grand mal to the petit mal type. Then, after a time, these ceased to occur. In several of these cases, there has been no return of the seizures, their apparent cure varying from several months to as much as four years, in one case for twenty-one years.

Fig. 3.—Bacillus epilepticus from blood of rabbit six days after intravenous inoculation. An early growth is here seen isolated in the left upper quadrant.

METHOD OF INVASION OF THE HUMAN SYSTEM

The facts already given would seem to be suggestive if not conclusive as to the infection of the general system through that gateway. These conclusions, it would seem, are further confirmed by direct observation in many human subjects. Thus it needs to be here restated that, in cases in which the blood had proved positive as to the presence of the *Bacillus epilepticus*, the same organism has been found in the cecum and in the enlarged and indurated lymphatics of the mesocecum. In cases treated by appendicostomy or cecostomy, the organism is readily demonstrated in the cecal drainage until after the bowel has been successfully subjected to postoperative bactericidal treatment. In cases in which the vermiform appendix has been removed at previous operation, the organism has been demonstrated in the cecum. In cases in which I have removed a part of the vermiform appendix in the course of an appendicostomy, the organism has been demonstrated in the interior of the removed segment. These observations, of course, are further confirmed by both the clinical phenomena and pathologic conditions uniformly found in so-called "idiopathic" epileptics.[2] Thus the relationship between constipation and epilepsy would seem further to confirm the fact of a primary cecal focus under circumstances of stasis which naturally favors the more rapid multiplication of the organisms. The ptotic or other retardative condition with resulting back pressure, always present in some form in these cases, mechanically enforces the absorption not only of toxins evolved by the organisms, but also of the organisms

2. Reed, C. A. L.: Diagnostic Methods and Pathologic Constants in Idiopathic Epilepsy, THE JOURNAL A. M. A., Jan. 29, 1916, p. 336.

themselves. These facts, associated with the additional fact that we have not so far found the organism about the tonsils or the teeth, would seem to indicate that the alimentary canal is at least the chief, if not the exclusive, atrium for the invasion of the system. The final answer on this point ought, however, to be based on a much wider range of observation.

COMMUNICABILITY

The mere fact that one rabbit developed epilepsy by licking epileptic germs from the ear of another rabbit, and that other rabbits developed the disease by eating food that had become contaminated by contact with fecal discharges from epileptic rabbits, at once provokes thought as to the possible communicability of the disease from one human being to another. This possibility becomes the more impressive in view of two cases now under my observation. Both patients are physicians. One, a vigorous man of about 35, who had never been seriously ill, not only attended but assisted in the nursing of an epileptic on whom I had done an ileosigmoidostomy, and in whom there was speedy development of paralytic ileus. In an effort to secure action from the bowel, the physician himself administered several enemas. About five months later, this physician himself fell in an epileptic seizure, and has since had three other grand mal attacks. Another physician, aged a little over 50, at this time in the hospital following operation at my hands, has had epileptic seizures of gradually increasing severity for the last twelve years. He recalls that several months before his initial attack, he personally administered an enema or several of them in a case of status epilepticus. His blood, cecum, vermiform appendix and retrocecal lymphatics were all positive as to *Bacillus epilepticus* at the time of operation. In neither of these cases could there be anything more than a presumption based on circumstantial evidence, that, through some accidental means — possibly the hands of the victims themselves — the organism had been carried from the alimentary canal of the patient to that of the attendant. The fact, however, that the records of institutions for epileptics show that a very large proportion of the cases come from the insanitary abodes of vice, poverty and other evidences of degeneracy, in short, from environments in which personal hygiene is at its lowest ebb, is suggestive of contamination rather than of inheritance. It must be conceded that while the evidence so far accumulated is largely circumstantial and inconclusive, additional significance is given to it by the character of the organism itself. The fact that it is a spore-bearing bacillus, and that the spores are among the most resistant yet discovered, adds to the obvious danger. In a non-nutritive wet medium, they have survived under observation for quite four months without evidence of diminished vitality. No observation has been made as to their survival in either a dry or moderately moist environment. In view of the fact that the organism demonstrably reaches the soil through fecal discharges, and in view of the fact that its spores are highly resistant and that they can and do survive for long periods, there is strong probability that the soil may be recognized as its extracorporeal habitat. This probability is increased by the fact that, morphologically, the nearest analogue of the spore-bearing bacillus of epilepsy is the equally spore-bearing bacillus of tetanus, and that the primary habitat of the latter has been demonstrated to be the soil. The fact that a larger number of people have epilepsy than have tetanus is another fact suggestive of the relatively greater dissemination of the cause. In view of all these facts, it may be well to take due precaution against communication until further investigation can confirm or disprove their apparent significance.

PATHOGENICITY

I know no better way to outline the pathogenic effects of this organism on the human system than by quoting from my Los Angeles address of Feb. 18, 1915, several months before we had succeeded in isolating the bacillus. I then said:[3]

> The most important conclusion that has been forced upon me by my clinical observation is that the rôle of constipation, as a causative factor in epilepsy, is due to the more than probable fact that the really initial cause is to be found in a specific infection. I am so convinced of the accuracy of this conclusion that, in the absence of actual identification of the micro-organism, not only its existence, but many of its characteristics may be predicated upon its clinical manifestations. Thus it may be safely assumed that this organism, probably a bacillus, belongs to the gas-forming series. Its habitat is the alimentary canal, probably originally the duodenum, but in all instances, finally, the colon. It is, furthermore, obviously toxogenic. From its general habitat in the intestinal mucosa, the infection may travel in either or both of two directions, namely, outward with the intestinal juice, the succus entericus, and if not promptly carried away in the alvine current, must be taken up again in the process of absorption, and in this way become an additional element in systematic contamination.

In further discussion of this then hypothetic organism and its toxins, I added that they, one or both,

> have the faculty of accumulating in the tissues and in the circulatory media. Once within the blood current, they display a selective affinity for the sensory and motor centers. It is, furthermore, obvious that their effects upon these centers are relative to the size of the accumulated dose and the tolerance of the individual. When the accumulation goes beyond the point of tolerance, we may have, first, a flash of unconsciousness with a minimum of muscular disturbance, or none at all (petit mal); or second, sudden and profound loss of consciousness, with violent convulsive disturbance (grand mal); or third, persistent and almost coalescent seizures of the latter variety (status epilepticus). I have demonstrated to my own satisfaction that these manifestations are identical in essence, because they are identical in causation, the variation in degree and intensity being determined by corresponding variation in the dose of the causative agent.
>
> Another constitutional effect is to produce a certain amount of mental dulness, with depression amounting, in most cases, to actual narcotism of from a few minutes to several hours following explosions.
>
> The infection is, furthermore, responsible for two other series of phenomena. The first is local, within the intestines, and is characterized by the elaboration of gas having a characteristic and very offensive odor. This gas formation may occur in some degree during the interval between attacks, but is always more marked at the time of attacks, or more properly, explosions. It is then associated with more or less violent muscular disturbance of the intestines, and with the sudden stimulation of the salivary, urinary and cutaneous secretions. The saliva, urine and perspiration are liable to have the same odor as the gas generated in the intestines. It would seem at this time as if the patient had literally been the victim of an internal explosion, the resulting offensive and characteristic odor corresponding, for purposes of illustration, to that of burnt powder. Another constitutional effect of epileptic infection is to bring the mean average temperature below the normal standard, approximately to 97 F. This mean average is associated

3. Reed, C. A. L.: Constipation in Relation to Various Diseases, Lancet-Clinic, March 13, 1915.

with some vacillation, which increases until an explosion is reached, after which it again for a while remains near the mean average of the individual case.

CONCLUSIONS

This review, and the facts presented, force certain conclusions which are not without practical significance.

1. Epilepsy is an infection depending on a specific spore-bearing organism which it would seem that I am justified in calling *Bacillus epilepticus*.[4]

2. The *Bacillus epilepticus* invades the system through the alimentary canal, its chief focus being the cecum, from which it reaches the circulation by forced absorption induced by mechanical retardation of the fecal current.

3. The *Bacillus epilepticus*, by virtue of its spore-bearing characteristic, under ordinary circumstances and without appropriate treatment, has the ability in most cases to perpetuate itself indefinitely in both the cecum and the blood.

4. In a certain very limited number of instances, the *Bacillus epilepticus* seems to be overcome by the natural immunity, but only where there is no focus in the intestines for the continued infection of the system — a circumstance which would seem to account for the spontaneous recovery.

5. Treatment, surgical and bactericidal, to be rational and effective, must be addressed to the organism, with reference, first, to arresting its intake from the intestines, and, secondly, to its neutralization and eradication from the blood.

Union Central Building.

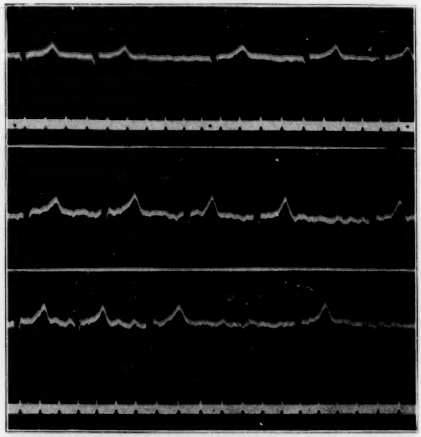

Fig. 1.—Electrocardiogram obtained July 23, 1915, at 11 a. m., showing auricular fibrillation; first and second leads.

4. In my article on "Diagnostic Methods and Pathologic Constants in Idiopathic Epilepsy" (Footnote 2) I referred to this organism as the "epilepticoccus." This grew out of the fact that its morphology as shown at different stages of development was confusing as to classification. Bra indicated this confusion by referring to it as a possible *"coccobacille, diplobacille, streptobacille,"* and finally designating it the "neurococcus." Hyatt has, however, demonstrated that it is a bacillus. This prompts me to add that the researches chronicled in the foregoing summary had advanced to practical completion, and the organism had been isolated and identified, when a search of the Index Medicus brought to my attention the fact that the same subject had been gone over quite fourteen years previously by M. Bra (Compt. rend., Acad. d. sc., Jan. 6, 1902; Rev. neurol., 1902, p. 447; Bull. off. Soc. méd. d. prat., 1902, xii, 289; Rev. neurol., 1903, v. 408), to whom credit for priority of investigation must be freely accorded. As a surgeon, I had approached the question in a quite accidental way and from the strictly surgical standpoint. I was amazed, therefore, to find that so important an observation as that by Bra, although primarily published in a neurologic journal, had since been practically ignored by the neurologic profession. Bra isolated the same organism, injected it into rabbits, produced epileptic convulsions in them and regained the organism from the blood of the infected rabbit. The organism was found in seventy consecutive epileptics, while it was not found in twenty consecutive nonepileptics. It is thus apparent that the observations and conclusions by Bra, like those of my own which I have here recorded, conform strictly to the law of Koch. But my own investigations, while completely confirming the long neglected findings of Bra, have, however, carried the discoveries further by showing that the organism is a bacillus, that it bears spores, that it invades the system through the alimentary canal, that it is highly toxogenic, that it is susceptible of communication, that it is in a measure controlled by both surgical and bactericidal means, and it may be and generally is self-perpetuating in both the alimentary canal and the blood. It would seem, indeed, as if Bra's great work were another example of an important discovery having been overlooked by the world, just as the discovery of the law of heredity by Mendel was overlooked for many years until it was rediscovered by de Vries.

TRANSIENT AURICULAR FIBRILLATION

IN A HEALTHY MAN FOLLOWING HYDROGEN SULPHID POISONING *

G. CANBY ROBINSON, M.D.
ST. LOUIS

Auricular fibrillation is now firmly established as the disturbance of the cardiac mechanism causing the absolutely irregular pulse, a very frequent clinical phenomenon and the most usual type of cardiac irregularity observed in patients with heart disease.

The nature of the fibrillary process has been interpreted in various ways, such as being the result of multiple stimulus formation in various parts of the cardiac musculature (Lewis[1]) and as a lowering of the refractory phase of the various cardiac muscle bundles (Rothberger and Winterberg[2]). The theory of Garrey[3] rests, however, on a firmer experimental basis than any other that had been advanced. He considers that fibrillary contractions of the heart muscle depend on the establishment within the musculature of multiple regions of block or reduced conductivity. The impulses thus blocked or delayed take abnormal and circuitous paths, and return to the same portion of the muscle after the refractory state has passed off, but while other portions are still refractory. The latter portions are subsequently involved in a similar manner, and the whole tissue mass is thus thrown into a continuous incoordinated contraction, not initiated or sustained by new impulses arising from any definite location.

Although Garrey's observations give a clearer understanding of the nature of the fibrillary process, the essential causes which may determine its onset in the human auricles remain obscure. Gossage and Hicks[4] have discussed the question of causation of auricular fibrillation, and point out two possibilities: The first possibility considers that the fibrillation is due to some morbid condition of the muscle fibers, the actual ultimate stimulus which starts it being some sudden strain or the cumulative effect of prolonged overwork, as might be imagined to occur in valvular disease. The second possibility considers that the fibrillation is due to some extrinsic stimulus (for example, an altered chemical constitution of the blood) which, while more likely to influence an already diseased organ, might yet, if sufficiently strong, cause fibrillation in a heart that

* From the Department of Internal Medicine, Washington University Medical School.

1. Lewis: The Mechanism of the Heart Beat, London, 1911.
2. Rothberger and Winterberg: Ueber Vorhofflimmern und Verhofflattern, Arch. f. d. ges. Physiol., 1914, clx, 42.
3. Garrey: The Nature of Fibrillary Contraction of the Heart: Its Relation to Tissue Mass and Form, Am. Jour. Physiol., 1914, xxxiii, 397.
4. Gossage and Hicks: On Auricular Fibrillation, Quart. Jour. Med., 1913, vi, 435.

was previously healthy. These authors point out that there are obvious arguments to be brought forward against the latter view from clinical experience, and that it is very difficult to establish the fact that fibrillation ever takes place in a normal healthy heart in man. They report three cases in which fibrillation set in in hearts which were presumably healthy, and in one of these no lesion was found at necropsy, either grossly or microscopically. From their observations they conclude that auricular fibrillation may possibly occur in hearts which were previously healthy, and that if this is true, its essential cause must, in these cases, be outside the heart and not in any anatomic or pathologic change in the heart itself.

In a previous paper[5] I have reported a case of paroxysmal auricular fibrillation in which the heart showed no anatomic lesion demonstrable by clinical examination, and advanced the hypothesis that the onset of recurrent attacks of fibrillation may have depended on changes in the blood supply to the auricular musculature.

As the question of the essential cause of auricular fibrillation is of clinical importance, it seems of value to record cases in which the onset of auricular fibrillation has apparently occurred under well defined conditions, and especially when cardiac disease can be reasonably eliminated as a causative factor. For this reason the following case seems worthy of record:

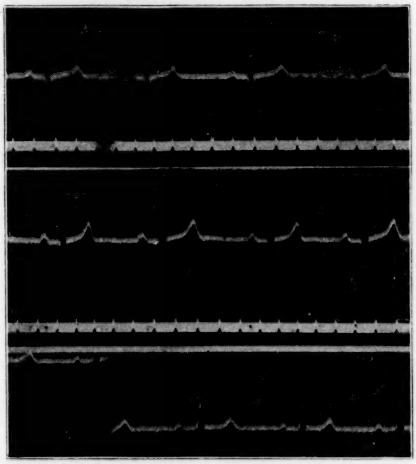

Fig. 2.—Electrocardiogram obtained July 23, 1915, at 7 p. m., showing the normal cardiac mechanism; first, second and third leads.

REPORT OF CASE

A healthy man of 44 was brought into the Barnes Hospital, July 23, 1915, from a chemical factory where he had been suddenly overcome by fumes. He had been working outdoors and was overcome on the morning of the first day at this type of work. He had been mixing some green liquid which did not have much odor, when he suddenly felt dizzy and began to see green and blue colors. He tried to move away and call for help, but fell unconscious. He soon regained consciousness, but found he could not raise his head. In falling he sustained a lacerated wound of the scalp. He had always been a healthy, strong man, and had had no previous serious illness.

On admission the patient was somewhat dazed. The pulse was irregular, 69 per minute. When the routine physical examination was made, the sensorium was clear. There was no dyspnea or cyanosis. The conjunctivae were not injected, but the pharynx was somewhat reddened. Throughout both lungs, subcrepitant râles were heard. The heart outline by percussion was normal in shape and size, extending 3.5 cm. to the right and 9.5 cm. to the left of the midsternal line. The heart sounds were very distant and indistinct, and occurred irregularly. No murmurs were heard, and each heart beat produced a pulse wave at the wrist. The lacerated wound of the scalp was found to be trivial. The pulse was 66 per minute, and irregular in force and rhythm. Electrocardiograms obtained at 11 a. m., about one hour after admission, were typical of auricular fibrillation (Fig. 1).

In a few hours the pulse had become normal, and the electrocardiograms obtained at 7 p. m. showed that the normal cardiac mechanism had been reestablished (Fig. 2). There was, however, a slight delay in conduction, the P-R interval measuring from 0.19 to 0.20 second. The heart rate was 60 per minute. Percussion showed the cardiac dulness to extend 3.5 cm. to the right and 10 cm. to the left of the midsternal line. Heart sounds were clear and of fair quality, being less distant than before. The systolic blood pressure was 120 mm. Hg, the diastolic 75.

On admission the patient showed a leukocytosis, the count being 20,900 per cubic millimeter, 88 per cent. of which were polymorphonuclear neutrophils. The urine showed no abnormalities, and the Wassermann reaction was negative. There was no fever or dyspnea at any time.

The patient made an uneventful recovery, and seemed to be a healthy, normal man in every way, except for nerve deafness in the left ear. He left the hospital in three days and went back to work in the chemical works. He remained there at work for about a month, and although he was not again observed, his foreman reported that he seemed well in every way.

At the chemical works it was reported that he had been overcome with hydrogen sulphid, which was being passed through a copper sulphate solution.

COMMENT

The action of hydrogen sulphid on the heart, apparently, has never been the subject of experimental investigation. Lehmann[6] reports observations on rabbits, cats, dogs and men, and does not record any cardiac arrhythmia.

The poisonous effect of hydrogen sulphid is due in part to its local irritant action, and in part to its direct effect on the central nervous system (Cushny[7]). The respiratory passages and mucous membrane become inflamed, and unconsciousness occurs from direct action on the brain and medulla. The sudden onset of unconsciousness, as seen in this patient, is not uncommon, as has been observed in sewer gas poisoning. According to Lehmann, 1 part in 2,000 parts of air may induce severe symptoms, and 1 part in 1,000 is probably sufficient to produce a fatal outcome.

In the case reported, transient auricular fibrillation occurred in a healthy man with an apparently normal heart, following hydrogen sulphid poisoning, and apparently as a result of this poison. In what way the poison set up the abnormal auricular activity, whether by direct action on the auricular musculature, whether by its action on the nervous centers controlling cardiac activity, or whether by changes in the blood,

5. Robinson, G. C.: Paroxysmal Auricular Fibrillation, Arch. Int. Med., February, 1914, p. 298.

6. Lehmann: Experimentelle Studien über den Einfluss technisch und hygieinisch wichtiger Gase und Dämpfe auf den Organismus, V, Schwefelwasserstoff, Arch. f. Hyg., 1892, xiv, 135.

7. Cushny: A Text-Book of Pharmacology and Therapeutics, Philadelphia, 1915, Ed. 6.

cannot be determined. The case is one, however, which seems to point out that auricular fibrillation in man may be set up by an extracardial factor alone.

GRANULOMA PYOGENICUM OF THE LIP

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Despite the comparative frequency with which granuloma pyogenicum occurs, the condition has attracted very little attention in this country. The disorder was first described under the title of "botryomycosis hominis" in 1897, by Poncet and Dor,[1] who believed the disease to be analogous to botryomycosis of horses (Rivolti[2]). Two years later Sabrazès and Laubie[3] demonstrated the identity of the so-called "botryomycosis" with the common *Staphylococcus aureus*, and their conclusions were verified by Bodin[4] in 1902. Since then French writers have referred to the condition as "pseudo-botryomycosis hominis" or "granulome pedicule" (Lenormant).[5] In 1904, Hartzell[6] reported a series of four cases of the disease from America, and suggested for it the very apt designation of "granuloma pyogenicum," a title which has received general approval and acceptance. Kuttner[7] has proposed the name of "granuloma telangiectodes," but it is hardly probable that this appellation will be widely adopted, as it is neither so euphonious nor so appropriate as the one introduced by Hartzell. Wile[8] has recently made an exhaustive study of the condition. He concludes that "the entire group of so-called pseudo-botryomycosis hominis, granuloma simplex, granuloma telangiectodes and granuloma pyogenicum may be grouped in one class, and may be regarded as ordinary granulation tissue, appearing, for as yet undetermined reasons, in the unusual form of a tumor. The etiologic factor is not a fungus, but probably the *Staphylococcus aureus*, perhaps in an unfavorable soil or in an attenuated form. The histologic changes are essentially the same in all forms, minor differences being simply in degree of vascularity and inflammation. Although never malignant, the growths tend to recur, unless cauterization of the base is practiced."

The little tumors are commonly, but not invariably, situated on those parts which are most frequently subjected to trauma; consequently the hands and feet are favorite sites for their development (Brocq[9]).

Cases involving the lip have been reported by Poncet,[1] Savariaud and Deguy,[10] Delore,[11] Legroux,[12] Picqué,[13] Le Berre,[14] Terrier,[15] Balzer and Alquier[16] and Noury[17] in France, and Gilchrist[18] in America. During the past year I have observed three instances in which this region was affected.

REPORT OF CASES

CASE 1.—In a housewife, aged 25, referred to me by Dr. M. A. Hanna of Kansas City, the lesion had developed on a small, raw surface left by a fever blister near the mucocutaneous juncture on the lower lip, at a point not far from the median line, and had existed eight months. At first it appeared only as a small red papule, but it gradually increased in size until, at the end of three months, it was as large as a grain of wheat. The surface was smooth, red and shiny, and the lesion bled profusely when handled. The base was not indurated. There was no pain at any time. On examination, the patient was found to be a slender but well nourished woman, with brown hair and eyes, and a smooth, soft skin. With the exception of a few acne lesions on the face and chest, the integument on parts other than the lip was normal. The growth was a small, pedunculated tumor, about the size and shape of a cherry stone, dark red, with a shiny, glazed epithelial covering. Histologically it consisted of a mass of new and old connective tissue, permeated by numerous large, thin-walled vessels, and enclosed in a thin epithelial capsule which consisted of four or five layers of slightly altered prickle cells, an attenuated stratum granulosum, and a loosely adherent stratum corneum. The papillary bodies near the base of the pedicle were hypertrophied, but within the growth they had totally disappeared, leaving the under surface of the limiting membrane smooth and

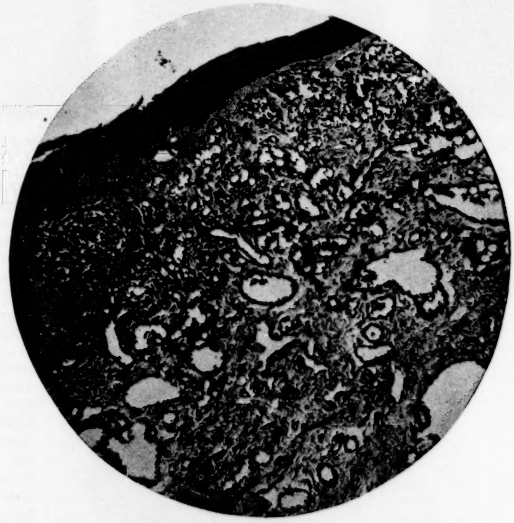

Fig. 1 (Case 1).—Granuloma pyogenicum of the lip, near base of growth. Composition of epithelial covering is shown, together with character of connective tissue stroma, and size and distribution of blood vessels and cavities. An area of leukocytic infiltration is shown at the left hand margin (Leitz, No. 4 ocular, No. 3 objective, 18 cm. extension).

1. Poncet and Dor: Rev. de chir., 1897, xviii, 996; Arch. gén. de méd., 1900, iii, 129; Lyon méd., x, No. 24, p. 97; ibid., 1898, Nos. 5 and 6, pp. 145 and 189.
2. Rivolti: Gior. d. Anat., Pisa, 1884, x, 12.
3. Sabrazès and Laubie: Arch. gén. de méd., 1899, p. 118.
4. Bodin: Ann. de dermat. et de syph., 1902, iii, p. 289.
5. Lenormant: Ann. de dermat. et de syph., 1910, v, Series 1, p. 161.
6. Hartzell: Jour. Cutan. Dis., 1904, p. 520.
7. Kuttner: Beitr. z. klin. Chir., 1905, xlvii, 1.
8. Wile: Unna's Festschrift, Monatsh. f. prakt. Dermat., 1910.
9. Brocq: Traité élémentaire de dermatologie pratique, Paris, 1907, i, 795.
10. Savariaud and Deguy: Gaz. d. hôp., 1902, p. 115.
11. Delore: Lyon méd., 1899, No. 29; Gaz. d. hôp., November, 1900, p. 117; Lyon méd., 1900, No. 18; Gaz. d. hôp., 1902, p. 102.
12. Legroux: Thèse de Paris, 1904.
13. Picqué: Tr. Soc. de chir., 1903.
14. Le Berre: Thèse de Paris, 1904.
15. Terrier: Tr. Soc. de chir., 1900.
16. Balzer and Alquier: Ann. de dermat. et de syph., 1901, p. 479.
17. Noury: Thèse de Bordeaux, 1915.
18. Gilchrist: Jour. Cutan. Dis., 1904, p. 524.

unmarked. The dense connective tissue in the center of the tumor was traversed by innumerable blood vessels of various sizes, running in all directions. Numerous leukocytes, lymphocytes, and plasma cells were observed along the courses of the capillaries and scattered about in the stroma. Only a few groups of cocci were found, and these were located near the base of the growth.

CASE 2.—In a man, aged 25, a law student, referred to me by Dr. Jabez N. Jackson, the lesion had developed from a tiny razor cut, on the left side of the lower lip, and had been present four months. It had been removed twice during this

Fig. 2 (Case 1).—Granuloma pyogenicum of the lip, of eight months' duration.

Fig. 3 (Case 2).—Granuloma pyogenicum of the lip, of five months' duration.

Fig. 4 (Case 3).—Granuloma pyogenicum of the lip, of seven months' duration.

period, once by means of a ligature and again with scissors, but had promptly recurred each time. As in Case 1, there was profuse hemorrhage on even slight manipulation of the tumor, and the patient was greatly worried, suspecting malignancy.

CASE 3.—This occurred in a housewife, aged 30, referred to me by Dr. W. Connelly Anderson of Kansas City, Mo. The lesion which was a trifle larger than the head of an ordinary pin, had developed on the site of a fever blister, and had been present seven months. Superficial cauterization with silver nitrate had aggravated the condition instead of benefiting it. The tumor was soft and compressible, but bled on very slight provocation. The patient said that the growth temporarily increased in size immediately preceding each menstrual period.

TREATMENT

In all three instances excision, under novocain anesthesia, was practiced, the raw bases sponged dry, and then thoroughly and deeply frozen by means of a hard, pointed stick of Pusey's carbon dioxid snow. While this agent is not a direct antiseptic, it is probable that the arterial hyperemia which follows its use is of assistance in combating infection, and the cauterizing action of the refrigerant leaves little to be desired in the treatment of growths of this character.

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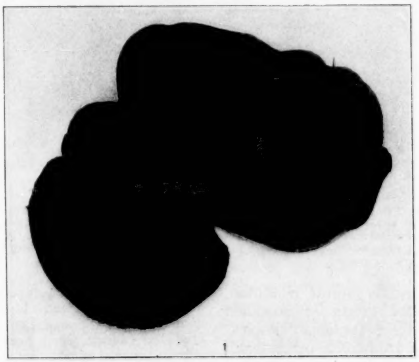

Hydrosalpinx with twisted pedicle. Tumor mass in Case 1 (Whitacre).

The Art of Authorship.—The two most engaging powers of an author are to make new things familiar, and familiar things new.—Johnson.

HYDROSALPINX WITH TWISTED PEDICLE

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TACOMA, WASH.

I believe that hydrosalpinx with twisted pedicle has not been given the attention as a definite surgical condition which is its due. Ovarian cyst with twisted pedicle receives definite consideration in every differential diagnosis in which an acute pelvic lesion with tumor arises, yet hydrosalpinx with twisted pedicle is not mentioned in some of our textbooks of differential diagnosis, and others merely mention the possibility. I have encountered two such cases within a brief space of time, and feel that they should be reported. Both of these patients suffered the sudden, severe seizure which is characteristic of the same accident with ovarian cyst, and in each instance a complete twist of the broad ligament was found beneath a tremendously dilated fallopian tube. The tumor mass was in each instance from blue to black, and the fallopian tube contained blood. The lesion found in each was a hematosalpinx, and should be so styled; yet the foregoing caption is given since a study of the history of these cases, together with a careful study of the pathologic material, leaves little doubt as to the fact that these patients suffered primarily from hydrosalpinx of very considerable size; that the enlarged tube became twisted on its broad ligament pedicle in a manner quite analogous to the ovarian cyst twist, and that the effusion of blood into the tube was secondary and was the direct result of the circulatory disturbance caused by the twist in the broad ligament.

These cases recall to my mind a number of earlier cases in which a large, freely movable hydrosalpinx was encountered, and in which this twist might easily have occurred. The infrequency of the accident here-

with reported will probably be explained by the fact that hydrosalpinx is usually accompanied by more or less extensive adhesions within the pelvis, and that these adhesions prevent free mobility of the cystlike tube.

CASE 1.—Miss A., aged 23, was referred to me in April, 1915, by Dr. Rich of Roy, Wash. She had suffered from gonorrhea two years previously, had borne a child one year previously, and had suffered to a moderate degree from pelvic discomfort and pain. Three days previous to her admission to the hospital, she had been seized with sudden severe pain in the right iliac region, vomited and felt very ill. A rapidly increasing pulse and temperature, rigidity of the right rectus, constant pain, and the discovery of a tumor mass in the right side led to the conclusion that the patient suffered from acute appendicitis with abscess formation. My own examination of the patient introduced an element of doubt regarding this diagnosis, since bimanual examination revealed a large, rounded, movable mass which occupied the entire right half of the pelvis and extended beyond the median line. The mass was not extremely sensitive, seemed just beneath the abdominal wall, and was not particularly marked in the culdesac. Ovarian cyst with twisted pedicle and ectopic pregnancy were not fully excluded, and an exploratory incision was made in the midline. There was much free blood-colored serum in the free peritoneal cavity, and a dark blue or black cystlike tumor presented. A complete turn was demonstrable in the pedicle of this freely movable tumor, and it became at once evident that the tumor mass was made up of a tremendously enlarged left tube and a huge ovary, and that the twisted pedicle was the broad ligament. The tumor mass, which is shown in the accompanying illustration, measured 7 inches in length and 5 inches in diameter. The recovery of the patient was uneventful.

CASE 2.—Mrs. B., aged 45, married, multipara, was seen in consultation with Dr. P. B. Swearingen of Tacoma. It is unnecessary to give the history of this patient in detail except to state that the early symptoms of severe abdominal pain, vomiting, distention, and the failure to move the bowels by enemas, were suggestive of intestinal obstruction, and that our subsequent study of the case led us to operate on her for ovarian cyst with twisted pedicle. The lesion was precisely the same as that found in Case 1 except that the bluish-black mass was not quite so large. This patient also made an uneventful recovery.

I feel that even though these cases present a symptomatology and call for an operative management which differs in no way from ovarian cyst with twisted pedicle, they should have a definite pathologic classification.

The Reporting of Venereal Diseases.—A recent *Bulletin* of the health department of New York City reviews the situation with reference to the reporting of venereal diseases, and states that there has been a perceptible falling off in the number of cases reported during 1915. It is believed that this is largely due to a falling off in the number of cases reported by hospitals and institutions. Whereas during 1914 a total of 14,484 were reported from this source, during the year 1915 the figure dropped to 10,065, a decrease of more than 4,000 cases. The percentage of positive cases reported through the department's laboratory during 1915 also shows a diminution of 5 per cent. over that of 1914. The records show that the number of cases referred by the profession to the venereal diagnostic clinics is steadily increasing despite the larger number of physicians who are making the tests themselves. It seems that as in the past physicians have refrained from reporting their cases in private practice; only 103 cases of venereal disease having been reported through this source for the entire year of 1915. The report points out, in this connection, that every safeguard is provided to protect the secrecy of such reports, and that it is not obligatory to report the cases by name, the initials alone being sufficient.

THE MICROSCOPIC EXAMINATION OF FINGER NAIL DEPOSITS

SIGNIFICANCE IN FORENSIC MEDICINE AND IN PUBLIC AND PERSONAL HYGIENE

ALBERT SCHNEIDER, PH.D., M.D.
SAN FRANCISCO

The microscopic examination of the deposits under the finger nails promises to be of importance in forensic medicine and also in certain phases of public sanitation and personal hygiene. This form of examination has been known for some time, and has been practically applied in a number of criminal cases both in this country and in Europe, but so far it has not been adopted as an officially recognized routine in the examination of criminals or those suspected or accused of having committed certain crimes. The possibilities of this procedure became apparent to me over twenty-five years ago when incidentally examining the scrapings from my own finger nails and those of my laboratory assistants. The number and variety of substances found was astonishing. Since that time the microscopic examination of finger nail deposits has been made a laboratory exercise for students in connection with the study of fiber and of body cells and bacteria.

This particular exercise was at first sandwiched in as a diversion rather than a part of the regular course. Each student of a class of forty or fifty was requested to mount the scrapings from the nails of the second and third fingers of the right hand (in case of right handed persons) on a slide in a drop of water and to examine this carefully under the high power (450 diameters) of the compound microscope. The findings proved interesting and not infrequently astonishing to the student. The most important part of this laboratory exercise was the interpretation of the findings. The findings gave evidence of the routine labors engaged in for periods of from one to eight days previous, and of personal habits, of the kind and quality of clothing worn, of business occupations, etc.

It was found that there was a very notable difference in the contents of the deposits of the nails of the right and the left hands, and also in the deposits of the nails of fingers and thumb of the same hand. Numerous examinations proved that the ordinary methods of cleaning the hands by means of soap, hot water and clean towel, inclusive of the usual nail trimming and polishing, as observed by persons of clean and sanitary habits, does not materially alter the microscopic findings; in other words, the usual hand toilet operations do not clean the hands and certainly do not cleanse the inner surface of the free ends of the finger nails. Even the vigorous use of the nail brush with soap and hot water does not result in a removal of all the deposits. Of far greater influence is the habitual close trimming of the finger nails as observed by some persons. If the nails are regularly trimmed very close, to the point of nearly causing bleeding, very little deposit of any kind will find lodgment. This practice is rare, however, and may be considered the exception to the rule.

The bacteriologic findings of the finger nail deposits are also very interesting. The streptococcus group apparently predominates in most persons, rather than the staphylococcus or the colon bacillus group, as one might reasonably expect. The organisms found in the rather limited number of cases (143) examined predominate in the following order:

1. Streptococcus group, the acid fast varieties predominating.

2. Staphylococcus group.

3. *Bacillus coli* group, almost invariably present.

4. Bacilli, cocci and spirillae probably derived from mouth, soil, food, water, body surface, nose, eyes, sewage, dust, dirt, etc.

5. Occasional yeast cells, spores and filaments of higher fungi.

6. Larvae of vermes; occasional amebas; diatoms, algae; etc.

From the medicolegal standpoint, the examination of nail deposits will prove of greatest value in those criminal acts in which great violence is employed, as in murder, physical encounters of all kinds, and rape or attempted rape. In such cases it would be desirable to examine the nail deposits of both the accused and the accuser, for as is known, persons are not infrequently falsely accused, and particularly is this true in charges of rape or attempted rape. For example, scratches and other skin abrasions on hands and face of the accused should reveal skin epithelium, dermal fragments, blood corpuscles and possibly hair fragments of the accused in the nail deposits of the victim. If such findings proved wholly negative, especially in the absence of marked injury to the genitalia of the accuser, it would point to either false accusation or perhaps voluntary submission. Valuable evidence may also be obtained in other criminal acts. A husband was accused of having induced his wife to submit to the performance of criminal abortion and to have disposed of the fetus. The examination of the husband's finger nail deposits revealed a number of frustules of fresh water diatoms and a few filaments of oscillaria which led to the suspicion that he had buried the fetus in some marshy soil. Careful search along the marshy edge of a nearby stream revealed no newly made grave, but a slightly scooped out depression in the edge of the stream itself proved to be the burial place, and on digging disclosed the nearly full term fetus.

Efficiency in the line of investigation suggested above depends on long experience in micro-analytic work and on a wide range of microscopic study of all kinds of substances, animal, vegetable and mineral. The time required to qualify as expert in this line would vary, depending on personal differences; but in all probability the requisite experience, in addition to the necessary educational preparation, such as medical course, university course, special college course, etc., could not be attained in less than ten years of constant application.

In medicolegal cases the nail deposits should be taken in the presence of the chief of police, if possible. In some cases it may be desirable and necessary to take the nail deposits on the spot, and the analyst must therefore be vested with the necessary police authority to do this, and he must furthermore be authorized to call to his assistance any police officer that may be available. The deposits should be examined immediately, if possible, in a laboratory supplied with the necessary apparatus and chemical reagents. There must be on hand suitable report blanks on which the findings are to be recorded in ink or by means of an indelible pencil.

After the examination is completed, the findings should be summarized and interpreted. The greatest care must be observed in the interpretation of the results of the examination. The analyst must qualify as an expert and he must be free from all bias and in no case must he allow prejudice to influence him in any manner whatsoever. When called on to give an opinion, he must be able to speak as one who knows, and he must cast aside all prejudice both as to the scientific and moral principles which may be involved and as to the persons or personalities implicated. At no time must he allow himself to be in any way influenced by the opinions expressed by any member or members of the police force with whom he is of necessity associated.

Thus far the medical profession has given little attention to the part played by the finger nail deposits in the transmission of infections. That there is danger in the handshake is generally recognized and admitted by the laity as well as the medical fraternity, but so far there is no effort made to do away with this ancient custom. There are certain persons who refuse to shake hands or who do so under mental protest. The Chinese do not shake hands with each other, but perform this ceremony by shaking hands with themselves.

The chief source of danger in the handshake is in the deposits under the finger nails rather than in the hand and fingers. The more important infections traceable to the finger nail deposits may be divided into two groups as follows:

1. Autoinfections.—There is no doubt that many skin diseases are traceable to scratching. Of such nail borne autoinfections we may mention lupus, acne, boils and carbuncles, and septicemia. In this manner infections are carried to nose, to eyes, to ears and to mouth and throat. Skin infections are transferred from one part of the body to another by the scratching and skin picking habit or by constantly "digging" or "picking" at a sore spot, and as a result some persons are never quite free from boils and acneic eruptions, particularly persons with low opsonic indexes to the causative infections. Infants and young children are constantly picking up infections with their finger nails and transferring these to the mouth, nose, throat and eyes. Nail biters very frequently infect themselves through the materials under the nails. Children and some women have the habit of bringing the fingers to the mouth, thus favoring the transfer of infecting material from finger nails to mouth.

2. Heteroinfections.—In many cases the infection is traceable to the finger nail deposits of others, as by handshaking, stroking or caressing the head or face, etc. There is the case of the husband whose neck on the left side was never long free from one or more small pimples or boils traceable to his wife's habit of playfully pinching his neck. He ascribed the trouble to starched collars, but several changes in the laundry brought no relief. During the prolonged absence of his wife on a visit with relatives, the trouble disappeared entirely to reappear again on her return with a renewal of the playful habits.

It certainly requires no lengthy argumentation to prove that there is danger in the finger nail deposits. Most valuable information could no doubt be obtained through a careful microscopic and bacteriologic investigation of the nail deposits of the different classes and races of people. Such information would be of inestimable value to physicians, to sanitarians and to the public in general. Furthermore, the occasional if not routine examination of finger nail deposits of patients

would frequently give the attending physician valuable information regarding the source of the causative infections and personal habits which might have bearing on the disease.

This brief outline of a very important as well as interesting subject will, it is hoped, serve as a stimulus to others for making additional observations and investigations along the lines indicated.

THE PSEUDOREACTION IN THE SCHICK TEST AND ITS CONTROL*

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The pseudoreaction in the Schick test is caused, not by the soluble diphtheria toxin, but by the protein substance of the diphtheria bacillus which is present in the solution used for the test. The reaction may be obtained in individuals who have enough natural antitoxin to render them immune to diphtheria. It is important, therefore, to control these pseudoreactions, which are quite frequent in the adult, especially women (from 20 to 30 per cent.), but relatively rare in children. These control tests may be made after the reaction with the regular Schick test has developed, or, especially in the adult, the two tests may be made simultaneously, one on each forearm, and the clinical course of the reactions thus compared.

For the Schick test, the bureau of laboratories of the health department is supplying an outfit which contains carefully measured amounts of undiluted diphtheria toxin. This outfit, as previously described by me,[1] consists of a capillary tube which contains a little over one minimum lethal dose of a ripened diphtheria toxin, a small rubber bulb for expelling the toxin, and a 10 c.c. bottle of normal saline solution for diluting the toxin. Every 0.2 c.c. of the dilution represents one fiftieth minimum lethal dose, the amount used in the Schick test.

The outfit for controlling the positive, pseudo and combined reactions is similar to the Schick test outfit, but the toxin in the capillary tube has been heated to 75 C. (167 F.) for five minutes. Heating the toxin at this temperature destroys the soluble diphtheria toxin, but does not appreciably affect the protein of the diphtheria bacillus.

We made an attempt during the past two and one-half years, during which time the work with the Schick test has been carried on by us at the Willard Parker Hospital and various other institutions, to control as many of the pseudo and combined reactions as possible. Convinced of the fact that the pseudoreaction was a local anaphylactic response to the protein of the diphtheria bacillus, we at first used a solution containing the autolyzed substance of the Klebs-Loeffler bacillus. This autolysate consisted of a forty-eight hour agar growth of the diphtheria bacillus (No. 8 Park & Williams) which was suspended in salt solution in the proportion of 10 c.c. of saline to a Blake bottle culture. The bacterial suspension was washed four times with saline solution, made up to its original volume with distilled water, then shaken for two hours, killed at 57 C. (134.6 F.) for forty-five minutes and allowed to autolyze in the thermostat over night. The solution was then passed through a Berkefeld filter, and the filtrate considered as a concentrated autolysate. Ten c.c. of the autolysate, representing the growth of one Blake bottle, injected subcutaneously into a guinea-pig, did not show any evidence of soluble toxin. When the bacterial suspension was injected before its passage through a Berkefeld filter, a small knoblike induration developed, which soon disappeared. For use in the control of the Schick test in human beings, the concentrated autolysate was diluted 1:20 with salt solution, and 0.2 c.c. injected intradermally. Typical false reactions were obtained in the pseudo and combined Schick cases, but none in the negative or positive cases. By using a more concentrated solution of the autolysate, faint reactions could be obtained even in individuals who gave a negative Schick reaction.

The difficulty of estimating the amount of bacillus protein in the diphtheria toxin broth used in the Schick test, which would serve as a guide in making a proper dilution of the autolysate, prompted us finally to abandon the autolysate as a suitable control, and use either a toxin which had been slightly overneutralized with antitoxin, or a heated toxin in a dilution similar to that used in the Schick test. In the overneutralized toxin (2 units of antitoxin to each L + dose of toxin) we had added, however, another element, the antitoxin. This, though in extreme dilution (1 part to a million as finally injected), might yet be objected to as a possible additional source of error. We finally used the heated toxin as representing probably the most accurate way for obtaining a proper control test. A dilution of the protein substance of the diphtheria bacillus is thus obtained which is exactly similar to that in the solution used for the Schick test. The capillary tubes in the outfits represent simply a convenient and accurate way for heating the carefully measured amounts of diphtheria toxin.

The Research Laboratory of the New York City Health Department is now supplying these outfits. They will remain good for use for a long time, since there is no danger of deterioration of an unstable toxin.

The following are the directions accompanying the outfits:

DIRECTIONS FOR USING HEATED DIPHTHERIA TOXIN IN CONTROLLING THE SCHICK REACTION

Break off one end of the capillary tube, push the broken end carefully through the neck of the rubber bulb until it punctures the diaphragm within, and enters the cavity of the bulb; then break off the other end of the tube. Hold the bulb between the thumb and middle finger, place the index finger over the opening in the larger end of the bulb and expel the toxin into the saline. Rinse out the capillary tube by drawing up saline several times, then cork the bottle and shake the diluted toxin. Inject 0.2 c.c. *intracutaneously* on the flexor surface of the forearm or arm. Observe the reaction at the site of injection at the end of twenty-four, forty-eight, seventy-two and ninety-six hours, and compare with the original Schick reaction.

The capillary tube in this outfit contains the culture fluid similar to that used in the Schick test, but heated to 75 C. for five minutes. The heating destroys the diphtheria toxin, which is the active agent in the positive Schick reaction, but does not affect the protein substance of the diphtheria bacillus, which produces the pseudoreaction.

In an individual who gave a *positive* reaction only, the control test with the heated toxin will be negative. In one

* From the Research Laboratory of the Department of Health, City of New York.

1. Zingher, Abraham: A Simple Outfit for the Distribution of Toxin for the Schick Test, THE JOURNAL A. M. A., July 24, 1915, p. 329.

who gave a *pseudoreaction*, the control reaction will be of about the same size and appearance, and pass through the same clinical course as the original reaction; e. g., the two reactions showing a similar central area of redness of varying size, surrounded by a secondary areola which shades off into the surrounding skin. Both reactions begin to appear in about six to eighteen hours, reach their height in twenty-four to thirty-six hours and disappear in three to four days, leaving a poorly defined area of pigmentation and generally no scaling.

In an individual who gave a *combined* reaction in the original test, both the positive and the pseudoreaction may be detected. The positive reaction becomes manifest in the original test at the end of three to four days, when the pseudo-element of the reaction has disappeared, as a definite circumscribed area of redness, which measures from 1 to 2.5 cm. in diameter and shows superficial scaling with beginning brownish pigmentation. The pseudoreaction is detected in the control test with the heated toxin; the reaction will not be as marked as in the original Schick test, but passes through the typical clinical course of a false reaction.

FRACTURE OF THE GREATER CORNU OF THE HYOID BONE RESULTING FROM MUSCULAR ACTION*

H. P. ASHE, M.D., PITTSBURGH

Fractures of the hyoid bone due to muscular action are very rare. Stimson[1] mentions only two such cases out of forty-five hyoid fractures collected by Malgaigne, Hamilton, Gibb, Gurlt and himself.

The following case of fracture of the left greater cornu of the hyoid bone, having resulted from muscular action, will consequently be of interest:

Miss E. H., aged 29, domestic by occupation, called on me, Feb. 18, 1916, complaining of pain and swelling in the neck, and particularly of change of voice, the occasional absence of which so alarmed her as to be the incentive toward seeking medical aid.

The week previously, February 11, while engaged in the task of arranging portières, she inclined her head forcibly backward, and at the time felt and heard, as she expressed it, "something break in the neck." Swelling of the neck anteriorly, localized pain in the neck produced by motions of the head or tongue, bloody sputum, deglutition embarrassed by frequent choking, and alteration of voice variously muffled, hoarse, or absent were the symptoms early manifested. Cough and dyspnea were not experienced.

The patient was a tall, healthy looking, well developed muscular young woman, whose past medical history was uneventful, barring a tonsillectomy and an appendicectomy undergone a few years previously, since which time she has enjoyed excellent health.

A very discernible, well defined swelling, without ecchymosis, occupied the anterior and anterolateral cervical regions, beginning sharply at the superior border of the hyoid bone, and continuing into and traversing the submental region as far as the inferior border of the inferior maxillary bone.

Emphysema was not present. The hyoid bone was well outlined on palpation, disclosing no perceptible irregularity, save a slight inward deviation of the left greater cornu. Pain and tenderness were elicited when pressure was made at a point on the bone near the juncture of its left greater cornu with its body. Slightly to the left of this point was a slightly enlarged, tender submaxillary lymphatic gland. Examination of the floor of the mouth and oropharynx proved negative.

As a week had elapsed since the occurrence of the accident, and as union takes place promptly in hyoid fractures, crepitus and preternatural mobility were not present.

The contours and external surfaces of the thyroid and cricoid cartilages were unaltered, and both could be freely manipulated without any pain or discomfort. At the time of the examination, the dysphagia, bloody sputum, and pain due to motion of the tongue had all disappeared, and, according to the patient, the cervical swelling was diminishing.

Further intended study of the case by laryngoscopy and roentgenography was prevented by failure of the patient, who lives out of the city, to report subsequently. March 6, information indirectly obtained revealed only that the patient was still hoarse.

The fact that this patient was treating the external swelling with liniments for a week prior to calling on professional aid, which would not have been sought had she not been frightened by occasional speechlessness, renders it strongly probable that fractures of the greater cornu of the hyoid bone sequential to muscular action are more frequent than shown by the literature, and warrants the belief that cases presenting as many symptoms as the one just narrated, not to mention cases manifesting more vague and fewer symptoms, occur and run their course without recourse to the physician or surgeon.

The treatment was expectant, the patient being ordered to refrain from use of the voice, and to secure approximate immobility of the head and neck by means of wearing a high, stiff collar.

1304 Colwell Street.

* Read before the Allegheny County Medical Society, March 21, 1916.

1. Stimson: Practical Treatise on Fractures and Dislocations, Ed. 6, Philadelphia, Lea & Febiger, 1910, p. 180.

A CASE OF BOTHRIOCEPHALUS LATUS INFECTION

J. J. SINGER, M.D., ST. LOUIS
Assistant in Medicine, Washington University

Cases of *Bothriocephalus latus* infection are so rare in this country that it seems advisable to report all cases as they present themselves, if only to awaken interest and stimulate the search for others.

In 1904 Edsal[1] said that American literature does not provide a sufficient number of cases to indicate that the parasite is by any means common; but the authentic cases that he has found, together with a few reliable cases reported to him in private communications, led him to believe that those whose practices or hospital services brought them in touch with foreigners, especially Russians, Finns, and Swedes, are most likely to meet this parasite.

Many practitioners are content to make a diagnosis of "tapeworms," without identifying the species. This accounts for the small number of known cases.

At any rate, the *Bothriocephalus latus* is comparatively rare in this country, only twenty-two cases having been reported in America up to 1904. Since then there have been only eight other cases that I could find in the literature on the subject. Only one of these cases[2] was in an American-born boy, of Finnish parentage. This boy had never left the state of Minnesota. In all probability native foci may develop in the United States through the agency of our foreign-born element, and therefore it is necessary to report and follow up all cases if we wish to keep this parasite from getting a foothold in this country.

Nichorson believes that the probable reason that practically no cases develop in this country is our method of preparing fish for food; the larvae being destroyed in cooking. He states that he has frequently found the larvae of the *Bothriocephalus latus* in fish caught in the Great Lakes. Huber reports seven cases, seen in as many years, all of which were in Polish patients.

The case I wish to report presents nothing especially new. The specimen of the bothriocephalus is excellent.

The patient, Mrs. I. C., living in St. Louis, a native of Vilna, Russia, called at my office Jan. 23, 1915. She complained of indefinite pains in the abdomen, especially in the left side, lower quadrant. There was no fever or vomiting;

1. Edsal: Am. Med., 1904, viii, 1087.
2. This case was reported by Nichorson in 1906.

she had a sensation of fulness in the stomach, only slightly relieved by active purgation. Her appetite was poor and she had been sleeping poorly; during the last few months she felt weak and depressed. For the past few years she had noticed sections of tapeworms in her stools. Sixteen years ago, she also passed sections of tapeworm, at which time she was given an anthelmintic, and passed a tapeworm 15 feet long; she did not remember whether or not the head was recovered. She felt quite well for twelve years, when she again passed sections of the worm. At this time she suffered with fainting spells and attacks, similar to the present.

She was again given anthelmintics, with no results. From that time to this she has been passing sections at irregular intervals. She never felt perfectly well. A sister and her mother both had this parasite. The patient states that it was the custom in their vicinity of Russia for everybody to take worm medicine.

Physical examination revealed a small woman of fairly good color; the pupils reacted to light and accommodation; teeth fair, pharynx negative, no glandular enlargement, no enlarged thyroid. Lungs and heart were negative, abdomen very sensitive along the course of the descending colon. The pelvis was negative, except for some tenderness in the left adnexa. Blood smears were negative, hemoglobin 90, urine negative, stools showed sections of *Bothriocephalus latus* and numerous eggs; temperature 98.4, pulse 76, respiration 22.

She was ordered to take castor oil on the night of January 23, eat nothing but Holland herring, and drink considerable water. On the 24th at noon she was given a 10-grain capsule of male fern every half hour until six were taken; four hours later 2 ounces of castor oil were given.

At midnight of the 24th, she was taken with severe cramps, followed by perspiration and severe diarrhea. All the feces were collected. Up till 12 o'clock on the 25th, ten stools in all were passed. The stools were examined and 27 feet of the *Bothriocephalus latus* were recovered, including the head. The specimen was sent to the Washington University Museum.

The following day the patient felt quite well, her appetite was good, and all tenderness had disappeared. No eggs were found in the stools.

Carleton Building.

SPLIT TENSOR FASCIAE FEMORIS

LEO BERND, M.D., PHILADELPHIA

B. W., aged 18, in playing football had a dislocation of the right hip which was reduced without much trouble. The hip continued weak and seemingly became dislocated on the slightest adduction. The patient wore a cast for a month and then a brace. In the fall of 1915 he tried to play football, but became so much worse that it came out even when he did the "crawl" stroke in swimming.

Roentgenoscopy revealed no abnormal condition of the joint in either abduction or adduction. In consultation with W. M. Jackson Merrill, a diagnosis was made of a split in the tensor fasciae femoris muscle which caused the trochanter to buttonhole through the split in the muscle. The patient was anesthetized, an incision over the trochanter was made, and a split in the muscle about 4 inches long was found. Three mattress sutures of chromic kangaroo tendon were inserted, one continuous chromic catgut suture, three interrupted silkworm sutures through the skin and fascia, then a subcutaneous suture. Gauze soaked in alcohol was used as a dressing. A plaster cast from the knee over the hip was finally applied.

At the end of two weeks the patient was discharged. Four weeks later he was in swimming and going to dances with no return of symptoms. The "crawl" stroke swimming is the exercise advised as it is not a side kick, but an up and down motion of the feet and anterior muscles of the leg.

The case is unusual, and unless the slit had been sewed up, the boy would have been an invalid, as he could not exercise and was becoming a nervous wreck.

New Instruments and Suggestions

HYDROCHLORIC ACID AS A DECOLORIZING AGENT FOR THE TUBERCLE BACILLUS*

ROBERT A. KEILTY, M.D., PHILADELPHIA

The purpose of this paper is the determination of the value of hydrochloric acid as a decolorizing agent for the tubercle bacillus. This acid has been used in my laboratory for over two years in the preparation of several hundred specimens. These include blood, sputum, smears, urine, feces, tissues, both frozen and paraffin sections, and cultures.

I believe that it is wise to use any method of technic, once established, without variation. In this way it is possible to arrive at accurate comparative results. Technics, too, should be carefully scrutinized for points of error, and after all possible sources of mistake are corrected, one may go ahead with any given line of work. Nothing is more discouraging than to have an otherwise carefully prepared research clouded by faulty technic.

In selecting a decolorizing agent one finds a great variety in use and the variations in the percentages advised are marked. The methods range from a few seconds with 30 per cent. nitric acid to an indefinite time with 1 per cent. acid alcohol. In my early work, I used Pappenheim's solution, which is both a decolorizer and a counterstain. For the examination of routine smears I found this very satisfactory, but owing to numerous criticisms I decided to change.

The various acids were tried and hydrochloric acid finally decided on. This is not generally advocated and, so far as I know, has never been suggested stronger than 25 per cent. I started primarily with 30 per cent. and have been using this routinely for the past two years, allowing it to remain in contact with the material thirty seconds by the watch. Lately I have increased this to one minute, but I think that thirty seconds is sufficient for a properly prepared slide.

In the determination of the action of hydrochloric acid on the tubercle bacillus, I used: (1) a fresh culture one month old isolated from the sputum; (2) one one year old originally isolated from the sputum and the transplant three months old, and (3) fresh sputum. From each of these fourteen slides were made. They were stained five minutes with carbolfuchsin cold, the excess drained off and 30 per cent. hydrochloric acid applied. The first slide was washed off in one minute, the second in two minutes, and so on every minute up to ten; then fifteen, twenty, twenty-five and thirty minutes were allowed, in order, for each of the remaining slides. All were counterstained one minute with Loeffler's methylene blue.

It was found that the tubercle bacillus retained its acid-fast properties in all instances, including thirty minutes' decolorization, with several variations. In all a fading of the red in the bacilli is quite noticeable after five minutes. There is a tendency to become refractile which is later lost. Some bacilli retain a bright red color, especially the solid forms, while some at the same time have become mere shadows. In proportion, at thirty minutes the shadowy forms predominate. There is only a slight tendency to take on the blue color. This is more noticeable in the old culture, which had some blue forms from the beginning. Finally the old culture as a whole retained more of the acid-fast property than either the young culture or the sputum.

I wish to call attention to the uselessness of heating carbolfuchsin in the preliminary stain. This is an entirely unnecessary procedure in my experience, which covers several years in the use of cold stain. The use of heat is one of those methods which is mechanically advocated by one textbook after another, is probably not practiced by most men doing considerable work, and is the source of much inconvenience to the man who has an occasional slide to examine.

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* Presented before the Philadelphia Pathological Society, Jan. 27, 1916.

* From the McManes Laboratory of Pathology, University of Pennsylvania.

I have not studied hydrochloric acid in relation to the other acid-fast organisms. In thick smears and in sputum, after washing the hydrochloric acid with water, it may be necessary to run on a few drops of 95 per cent. alcohol. In most instances, and in thin smears, this is unnecessary, since the Loeffler's blue is an alcoholic solution and will, if allowed to remain three or four minutes, completely decolorize the thick areas.

CONCLUSIONS

1. Make thin smears on slides, fix with heat, stain with cold carbolfuchsin five minutes, decolorize with 30 per cent. hydrochloric acid thirty seconds or more by watch and counterstain with Loeffler's methylene blue.

2. Thirty per cent. hydrochloric acid for one minute will not decolorize any strain of tubercle bacillus with which I have worked.

3. In this percentage and for this time hydrochloric acid will decolorize all artefacts such as rims of red blood cells, bits of leukocytes, granules of protoplasm and all ordinary nonacid-fast organisms.

STABILIZED GENTIAN VIOLET

W. D. STOVALL, M.D., AND M. STARR NICHOLS, B.S.,
Bacteriologist and Assistant, Respectively, Wisconsin State Laboratory of Hygiene
MADISON, WIS.

Of the many stains which serve the bacteriologist in the capacity of a differential stain, there is not any single stain which has so wide an application as the one known as Gram's. The only disadvantage in the use of the stain is that the gentian violet used deteriorates, and on that account should be freshly prepared when wanted. In a laboratory in which smears for gonorrhea are examined at frequent intervals, it is quite a convenience to have the differential stain, Gram's stain, made up ready for use, and it was this necessity which led us to experiment with different formulas as well as with different organic preservatives in an effort to find a method of stabilizing the gentian violet solution.

CHEMICAL

Gentian violet is a mixture of pentamethyl and hexamethyl pararosanilin, and belongs to the class of stains known as

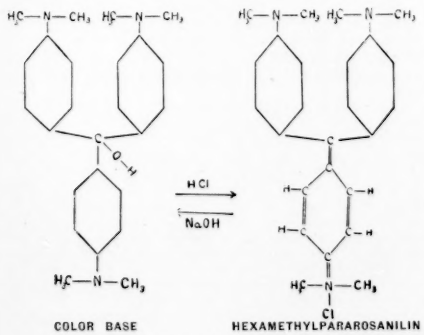

Fig. 1.—Formula showing change.

the triphenylmethane dyes. In the manufacture of this dye it is prepared first as the colorless color base and then subsequently converted into the colored compound by treatment with hydrochloric acid. This change is represented by the graphic formula (Fig. 1). The hydrochloric acid neutralizes the hydroxyl group in the colorless base, and immediately the chlorin atom migrates from the position which the hydroxyl group occupied to the amino group, with a corresponding rearrangement of the intramolecular structure which gives the recognized quinonoid grouping. If a solution of gentian violet is made alkaline with sodium hydroxid, the reaction is reversed and the colorless color base is again formed. Anilin is one of the ingredients in the regular Gram violet solution, and on account of the amino group acts like a weak base. The instability of the violet solution is therefore probably due in part to its action.

The ammonia of the air in the average laboratory probably also plays its rôle in decolorizing the stain. To prove that

STAINING OPERATION TIME MINUTES					RESULT OF EXAMINATION *				1,000 CC. CONTAINS 10% ALCOHOL PLUS			
STAINING SOLUTION NO.	GENTIAN VIOLET SOLUTION	GRAM'S IODIN	ALCOHOL 95%	SAFFRANIN COUNTER-STAIN	GONOCOCCUS GRAM - NEG.	STAPHYLOCOCCUS GRAM-POS.	BACILLUS TYPHOSUS GRAM - NEG.	DIPLOCOCCUS GRAM-POS.	ACID NORMALITY	ANILIN C.C.	GENTIAN VIOLET gm	% STRENGTH AFTER 8 MONTHS
1	1	½	3	½	0	6	0	4	.33	36	8	79.1
2	1	½	3	½	0	7	0	5	.20	36	8	83.3
3	1	½	3	½	0	7	0	6	.20	32	8	93.5
4	1	½	3	½	0	8	0	8	.066	32	8	87.5
5	1	½	3	¼	0	8	0	8	.033	32	8	88.0
6	1	½	3	½	0	5	0	3	.010	36	8	62.5
7	1	½	3	½	0	7	0	6	.005	36	8	77.0
8	1	½	3	½	0	8	0	7	.010	28	8	83.5
9	1	½	3	½	0	9	0	9	.005	28	8	89.5
10	1	½	3	½	0	10	0	10	.001	28	8	81.2
11	1	½	3	½	0	10	0	10	—	36	8	5.0

* Arbitrary unit for staining density: 0 = no stain, 10 = completely stained.

Fig. 2.—Results of test.

small amounts of a base would destroy the color in the violet solution, a series of tests were made, and it was found that N/500 sodium hydroxid would precipitate completely in one hour the color from a 1:10 dilution of the regular violet stain, and that N/10,000 sodium hydroxid would precipitate completely the same strength solution in three weeks. Along with the same series, a test with N/100 acetic acid in 1:10 dilution of the stain showed entire preservation after eight weeks' time. These tests proved conclusively that the stain could be preserved with small amounts of acids.

The next series of tests undertaken was to determine the concentration of acid which was best suited for this purpose. Eleven different solutions were prepared, ten of which contained acid, while the eleventh was made in the regular manner except that no acid was added. At the end of five months the gentian violet was determined quantitatively in each of the eleven solutions. These results are tabulated in the last column of Chart 2. It will be seen that in no instance did any one of the solutions which were preserved with acid deteriorate below 62 per cent., while the average strength is about 85 per cent. of the original strength. On the other hand, the one which was not preserved dropped to 5 per cent. of the original strength.

BACTERIOLOGIC

At the time the foregoing stains were prepared, it was deemed absolutely necessary that the preserved stain be tested out on known gram-positive and gram-negative organisms. To do this we used pus from a case of known gonorrhea containing the gram-negative diplococcus, typhoid culture (gram-negative), staphylococcus (gram-positive) and diplococcus (gram-positive). The four smears were placed

side by side on each of eleven slides, and each slide stained in exactly the same manner. Figure 2 gives the results of this test.

From this chart we see that a high concentration of acid is objectionable, because the gram-positive organisms have a tendency to lose their stain. Test Stain 9 was selected as the proper one for general use, as this showed practically no effect of acid on the staining quality. Accordingly, a large batch of stain having the formula of the one tested was made up, and is the one which we use regularly in the laboratory in general diagnoses. It has the following formula:

Anilin	28 c.c.
Gentian violet, Grüber	8 gm.
Alcohol, 95 per cent.	100 c.c.
N/1 hydrochloric acid	5 c.c.
Distilled water	q. s. ad 1,000 c.c.

The gentian violet is dissolved in the alcohol. The hydrochloric acid is added to the anilin, and the whole is dissolved in enough water to make 900 c.c. The aqueous solution is filtered and added to the alcoholic solution of the stain. The whole is filtered, and is then ready for use.

This stain keeps for about three months under ordinary laboratory conditions.

A NEW APPARATUS FOR DRAINAGE OF THE PLEURAL CAVITY

WILLIAM LERCHE, M.D., ST. PAUL

After recent experience with a case of cancer of the esophagus, in which I performed intrathoracic resection of the organ, I decided in future similar cases to drain the pleural cavity for twenty-four hours after the operation. The removal of the drainage tube, however, would have to be effected without admitting air to the pleural cavity. To this end I have devised a simple apparatus. Although the apparatus was originated for intrathoracic surgery, it is in cases of empyema that I expect it to become of great practical utility, because it is easily applied under local anesthesia, and the negative pressure which is essential to facilitate the expansion of the lung can easily be regulated.

In Figure 1 are shown the details of the apparatus: *a, a,* outer circular chamber in which the air can be rarefied by the suction bulb connected at *f*, thus fixing the apparatus to the right shoulder, and is furthermore glued to the skin by the aid of collodion applied to the bottom of the walls of the inner and outer chambers. The rubber tubing and the collodion when dry are sufficient to hold the apparatus on air tight; but until the collodion has dried and when the drainage tube is being removed, suction may be applied by the aid of the rubber bulb, *j*, to prevent the apparatus from being pulled off. The Woulfe's bottle, *e*, is provided with a quick-

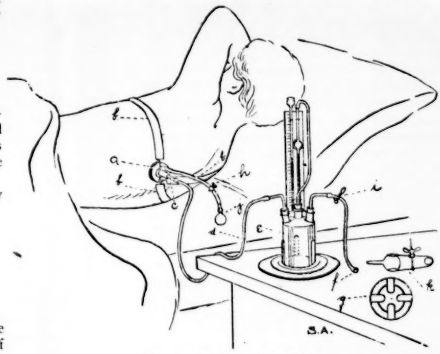

Fig. 2.—Apparatus in position.

silver gage for the observation of the intrathoracic pressure. The outlet from the bottle is at *f*, where a little valve (enlarged at *g*) fitted into the end of the rubber tubing prevents the air from returning to the bottle. Instead of the valve a rubber bulb with a contrivance by which the air pressure can be regulated by a thumb screw, as seen in *k*, may be inserted at *f*. When the intrathoracic pressure is as desired, the outlet of air can be shut off by the clip, *i*. After drainage, the rubber tube connecting the drainage tube, *c*, Figure 1, with the Woulfe's bottle is clamped, and tube *c* is withdrawn from the pleural cavity by a gentle rotary motion until its distal end gets some distance into the central chamber (as shown in *E*), where it is left until the wound in the chest wall has healed sufficiently to prevent air from entering the pleural cavity.

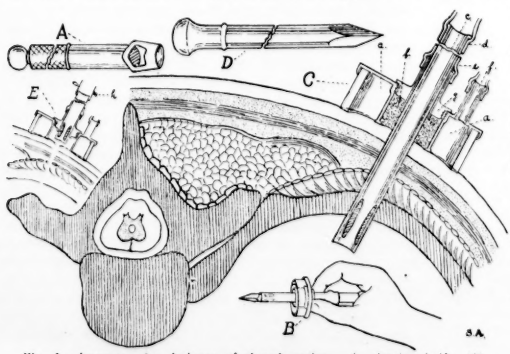

Fig. 1.—Apparatus for drainage of pleural cavity. *A*, circular knife (28 French) for removing a circular piece of skin exactly corresponding to the size of the drainage tube; *B*, apparatus with trocar held ready for introduction; *C*, apparatus in position; *D*, trocar; *E*, position of drainage tube after its removal from the pleural cavity.

the skin; *b*, central chamber loosely filled with iodoform gauze around the drainage tube *c*; *c*, the drainage tube fitted air tight by rubber tubing at *e*; *d*, the rubber tubing connecting the drainage tube with a Woulfe's bottle, shown in Figure 2.

In Figure 2, the apparatus, *a*, is held in contact with the skin by rubber tubing, *b, b, b*, encircling the body and over

The most comfortable position for the patient, after intrathoracic resection of the esophagus, is to lie on the right side half way on the back. When, therefore, the drainage tube is introduced into the pleural cavity before it is closed, as low down as possible and close to the mediastinum, it will drain at the most dependent point.

In case of empyema, the drainage tube may be introduced between ribs, or a rib may be trephined with an instrument corresponding in size to the drain.

Lowry Building.

Campaign Against Blindness.—The first annual report of the National Committee for the Prevention of Blindness, covering the first ten months of 1915, has just been published. This committee was formed to coordinate the activities of various local organizations. It also carries on field and research work, preparation of literature on the subject and the supply of lecture material for the publicity campaign. Ophthalmia neonatorum and blindness due to alcohol have received most of the attention. More than 90 per cent. of the funds for the work were provided by the Rockefeller Institute and the Russell Sage Foundation. The seventh annual report of the New York State Committee for the Prevention of Blindness is included with that of the national committee.

AN ELECTRIC COLOR FINDER

TO BE USED IN MAPPING OUT THE VISUAL FIELD AND THE BLIND SPOT

F. PHINIZY CALHOUN, A.B., M.D., ATLANTA, GA.

While I am not an advocate of electrically illuminated test objects in preference to the ordinary methods now used in mapping out the visual field and the blind spot, I believe such devices have their field of usefulness and can often be employed to advantage, for example, in office or dispensary work on dark days or in the evenings, and bedside examinations in poorly illuminated rooms or wards. To meet such requirements I have devised, and used for nearly two years, an illuminated color finder patterned after the very excellent and well-known instrument of Dr. Clifford Walker of Boston.

Electric color finder.

The instrument is about 10 inches long, and the head contains four perfect colors (white, blue, red and green) made in thin paper and protected by layers of glass, arranged on a slide which is controlled by a thumb guide placed out of the way near the handle. The thumb guide brings into view any one of the colored disks, which is illuminated by a miniature frosted lamp placed behind the color slide and supplied by a hand battery (or a rheostat attachment). There is an additional slide which fits on the face of the instrument and contains a 1, 2 or 3 mm. opening. The entire exterior is painted dull black and appears neat.

I am indebted to E. B. Meyrowitz of New York, maker of the instrument, for suggestions in its perfection.

THE INTRAVENOUS USE OF MERCURIC CHLORID

A NOTE ON A NEW METHOD OF ADMINISTRATION, WITH SPECIAL REFERENCE TO PREVENTION OF VEIN OBLITERATION

P. I. NIXON, M.D., SAN ANTONIO, TEXAS

Since salvarsan and neosalvarsan are no longer obtainable, the use of various mercury salts intravenously has become more widespread. This method of treating syphilis is not new, the use of mercuric chlorid having been introduced by Baccelli in 1893. It has been revived from time to time, and each time abandoned because obliteration of the veins has been produced. This is a definite disadvantage and a very possible danger; I myself have seen it eventuate in a local slough and edema of the forearm.

Any method of administration, therefore, which promises to prevent or decrease the frequency of vein obliteration is to be welcomed. The method which I am reporting is so simple that it is quite possible that it has been described before; it certainly is not in general use, and I have not been able to find a description of it in the literature. It is infinitely more simple than the method described by Thompson,[1] and accomplishes the same purpose in a more aseptic and less painful manner. It has the added advantage of using no heterologous serum.

The method is as follows: Mercuric chlorid, from one-tenth to one-third grain, depending on the dose, is dissolved in 10 c.c. of freshly distilled water and drawn into a 20 c.c. syringe. The needle with the syringe attached is introduced into the vein, and 10 c.c. of blood are aspirated into the syringe. The mixture is then injected in the usual manner, without withdrawal of the needle from the vein.

It will be seen that the object of the method is to substitute the insoluble, comparatively nonirritating mercury albuminate for the soluble, irritating mercuric chlorid—a substitution which takes place in vivo when mercuric chlorid is injected directly into the vein. I have found out experimentally that there is more than enough albumin in 10 c.c., or even 5 c.c. of blood to change the mercuric chlorid in the largest desirable dose; and Byrnes[2] has previously worked out the same problem.

I have used this technic in fifty injections without obliterating a single vein. To put the method to a thorough test, I have selected small lateral veins and at approximately the same point given as many as ten injections, at three day intervals, without disturbing the vein.

One cannot hold that this method is established by this small series of injections. In my hands it has been very satisfactory. Its ultimate utility will be proved or disproved only after it has been tried out more extensively by different observers.

205 Hicks Building.

1. Thompson, Loyd: The Intravenous Injection of Mercurialized Serum in Syphilis, THE JOURNAL A. M. A., May 1, 1915, p. 1471.

Therapeutics

HEMORRHAGIC CONDITIONS

VISCOSITY

By viscosity is usually meant cohesion between the particles in a fluid. It is a physical characteristic of all fluids, and hence of blood. It was thought that through a study of this property of blood some information of value in the diagnosis and treatment of disease might be gained.

In order to obtain a relative value for the viscosity of blood, it is compared to distilled water, which is considered unity. It has been found by means of various viscosimeters that the viscosity of blood in the normal person is between 4.5 and 5.5. This value may be influenced in various ways. It has been found that cold baths increase and warm baths diminish the viscosity.[3] Various diets continued over a period of time will also influence the viscosity of the blood. Meat eaters show an increased viscosity, and vegetarians a lowered viscosity. Heavy muscular work and profuse perspiration will increase viscosity, while the ingestion of large amounts of fluid will tend to diminish it.[4] Whereas chloroform and ether have no effect on viscosity of blood, alcohol, no matter how introduced, whether by mouth or intravenously, will increase it.

Heubner[5] calculated that from two thirds to three fourths of the viscosity of blood was due to the corpuscles. This is proved by the fact that immediately after hemorrhage the viscosity is diminished. In the anemias, even those associated with such chronic conditions as nephritis, cardiac conditions, tuberculosis or carcinoma, there is a diminished viscosity.[6] In primary pernicious anemia it is unusually low, Austrian[6] finding it as low as 1.7. In all of these cases there was, of course, a diminished corpuscle content of the blood.

In cases in which the number of corpuscles is increased, as in polycythemia, the viscosity is high. In one case mentioned by Austrian, the red blood corpuscle count was over 8,000,000 and the viscosity 13.6. In diabetes mellitus, if polycythemia is present, the viscosity will be higher than normal.

2. Byrnes, C. M.: The Intradural Administration of Mercurialized Serum in the Treatment of Cerebrospinal Syphilis, THE JOURNAL A. M. A., Dec. 19, 1914, p. 2182.
3. Burton-Opitz, Russell: The Viscosity of the Blood, THE JOURNAL A. M. A., July 29, 1911, p. 353.
4. McCaskey, G. W.: The Viscosity of the Blood, THE JOURNAL A. M. A., Nov. 14, 1908, p. 1653.
5. Heubner, quoted by McCaskey (Footnote 2).
6. Austrian: Johns Hopkins Hosp. Bull., January, 1911, p. 9.

V. 19

In asphyxia or conditions in which there is associated dyspnea or cyanosis, such as decompensated cardiac lesions, pneumonia or emphysema, the viscosity is increased. In jaundice it is also higher, owing probably to cholemia. It is increased in arteriosclerosis, although it bears no relation to the blood pressure. In typhoid fever it is unchanged, whereas in malaria it may be normal or subnormal, depending on the amount of anemia present.

Perhaps the only time when an increased viscosity would be considered an important factor is when an increase may mean added work to an already weakened cardiac musculature. Such would be the decompensated hearts, or in pneumonia, or where there is hypertension. In the latter class of cases iodids are of value. Boveri,[7] in a study of twelve cases, found that there was a marked diminution in the viscosity in eight of these cases following the administration of iodids. It has also been shown that good hygienic treatment with plenty of fresh air will tend to lower the viscosity.

BLOOD PLATELETS

Duke[8] has pointed out the importance of the blood platelet count in studying those pathologic conditions in which such an irritant as a chemical or bacterial toxin has entered the blood stream. Blood platelets have an important function. They have long been thought to be intimately connected with hemorrhagic diseases, and it has been supposed that they form a nidus from which fibrin extends in the formation of a clot. Other factors such as antithrombin, prothrombin and calcium are also more or less disturbed in hemorrhagic diseases. They appear to be closely associated with the blood platelets, or some substance produced by the blood platelets, since the latter disintegrate during normal coagulation of the blood.

Duke[9] believes that purpura hemorrhagica "is due wholly or entirely to an almost complete absence of blood platelets from the blood." He has shown that although the coagulation time may be normal, the bleeding time is prolonged. The bleeding time is determined by blotting up on absorbent paper at half minute intervals the blood from a bleeding point. The rate of decrease in size of the blots gives an index of the rate of decrease in the intensity of the hemorrhage. Duke quotes many others who also found a decrease in the number of blood platelets in purpura hemorrhagica.

Unless stained immediately after obtaining the blood, blood platelets will degenerate rapidly. They stain blue or violet with the usual stains, and are about one fourth to one half the size of a red blood corpuscle. They contain no nucleus and no hemoglobin.

Brockbank,[10] after carefully studying stained blood smears, states that the blood platelets originate from the red blood corpuscles. Wright[11] thinks that they are derived from large giant cells, called megakaryocytes, found in bone marrow. The normal blood platelet count varies between 150,000 and 500,000. It may vary in normal conditions. In the new-born child after the first week the number is nearer the upper border of the normal count, that is, about 400,000. During menstruation it may be below normal.

It is interesting to follow the blood platelet count in some of the pathologic conditions. Duke[9] states that Osler, Riess and others have found a reduced number in pernicious anemia. Others have found the count low in pneumonia, lymphatic leukemia, aplastic anemia and typhoid fever. Dimon[12] states that in splenomyelogenous leukemia there is a high count, from 500,000 to 1,000,000, while in lymphatic leukemia the platelet count may be reduced to between 30,000 and 150,000.

Duke[8] states that there is a general agreement that during febrile periods of acute infectious diseases the count is reduced, whereas during convalescence it is increased. He cites, as an example, diphtheria, in which, during the febrile period, the count in one case was 3,000, and during convalescence as high as 750,000. In chronic tuberculosis the count is usually high, even going above 1,000,000. In occasional cases it may be low. This is also true of chronic nephritis. In other conditions, like pneumonia and typhoid fever, the count is reduced. Duke explains these counts by assuming that in those cases in which the count is high, only a mild irritant is produced which has no strong toxic action on the blood-platelet forming organs. On the other hand, in cases in which the number is reduced, the toxin produced exerts a powerful irritant action. He proved these assumptions by finding the platelets reduced after injections into animals of diphtheria toxin, killed typhoid bacilli, benzol (benzene, C_6H_6) and tuberculin.

(To be continued)

7. Boveri: Presse méd., 1908, lxiii, 546.
8. Duke, W. W.: Variation in the Platelet Count, THE JOURNAL A. M. A., Nov. 6, 1915, p. 1600.
9. Duke, W. W.: The Pathogenesis of Purpura Hemorrhagica with Especial Reference to the Part Played by Blood-Platelets, Arch. Int. Med., November, 1912, p. 445.
10. Brockbank: Lancet, London, June 8, 1912, p. 1526.
11. Wright: Jour. Morphology, July, 1910.

New and Nonofficial Remedies

THE FOLLOWING ADDITIONAL ARTICLES HAVE BEEN ACCEPTED BY THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION. THEIR ACCEPTANCE HAS BEEN BASED LARGELY ON EVIDENCE SUPPLIED BY THE MANUFACTURER OR HIS AGENT AND IN PART ON INVESTIGATION MADE BY OR UNDER THE DIRECTION OF THE COUNCIL. CRITICISMS AND CORRECTIONS ARE ASKED FOR TO AID IN THE REVISION OF THE MATTER BEFORE PUBLICATION IN THE BOOK "NEW AND NONOFFICIAL REMEDIES."

THE COUNCIL DESIRES PHYSICIANS TO UNDERSTAND THAT THE ACCEPTANCE OF AN ARTICLE DOES NOT NECESSARILY MEAN A RECOMMENDATION, BUT THAT, SO FAR AS KNOWN, IT COMPLIES WITH THE RULES ADOPTED BY THE COUNCIL.

W. A. PUCKNER, SECRETARY.

MEAD'S DRY MALT SOUP STOCK.—A mixture containing desiccated maltose and desiccated dextrin (about equal parts) 47 per cent., wheat flour, 47 per cent., potassium carbonate 1 per cent. and moisture, 5 per cent. U. S. patent No. 1,171,724 (Feb. 15, 1916; expires 1933).

(Accepted for inclusion with the appendix to New and Nonofficial Remedies.)

Prepared by Mead Johnson & Co., Jersey City, N. J.

PHENOLPHTHALEIN - Monsanto. — A non-proprietary brand complying with the standards for phenolphthalein (N. N. R., 1916, p. 245).

Manufactured by the Monsanto Chemical Works, St. Louis.

12. Dimon: New York State Jour. Med., 1913, xiii, 561.

Child Labor Legislation.—The Children's Bureau of the U. S. Department of Labor has compiled and recently published a compendium of child labor legislation in the United States, which contains all legislation in force on Oct. 1, 1915. Two charts show the minimum ages and the hours of labor in the various states. Seven tables contain analyses of the laws relating to minimum ages, requirements for entering employment, hours of labor, compulsory school attendance, employments in theater and public exhibitions. There is also included the text of the different laws.

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SATURDAY, MAY 20, 1916

ACIDOSIS AND THE DIARRHEAS OF INFANCY

Acidosis is being much discussed in relation to the pathologic phenomena associated with it. Only a few years ago the term was usually limited to those abnormal manifestations of the presence of acetone, diacetic acid and betahydroxybutyric acid which are now more appropriately classed under the designation of ketone substances, the immediate causes of ketonuria or acetonuria. Subsequently acidosis was the name also applied to a condition in which the increased elimination of ammonia by the kidneys indicated the abnormal accumulation of acids, not necessarily of the group just referred to, somewhere in the body. The ammonia, acting as a neutralizing base, furnished an index of the occurrence of undue quantities of acid somewhere in the metabolic cycle.

From the broader standpoint of today it is conceivable that acidosis may result when any abnormal acids, such as betahydroxybutyric or lactic acid, are produced in excess in the body. It is possible also that acidosis may result when bases are lost from the body to an exceptional degree. Finally, an added category is suggested by the possibility that some types of acidosis may be associated with the failure of the acid excretory function of the kidney. Under ordinary conditions much acid is eliminated, chiefly in the form of acid phosphate, by renal activity, as the usual preponderatingly acid reaction of the urine testifies. A failure of this special regulatory function of the kidney would result in a retention of acid phosphate with a consequent true acidosis.

An exceptionally interesting instance of an acidosis, which may prove to be of the renal retention type, has been described by Howland and Marriott[1] of the Harriet Lane Home and the Department of Pediatrics of the Johns Hopkins University. It attends attacks of severe diarrhea not of the ileocolitis type in infants. The various signs now recognized as indicative of a disturbance in the acid-base regulation have been detected in suitable cases. Thus alterations in respiration are observed, the usual abdominal type of breathing by the young being succeeded by one which is both costal and abdominal. Again, a lowered tension of carbon dioxid in the alveolar air, likewise a symptom of acid intoxication,[2] is found in the diarrheal cases, sometimes even when a distinct hyperpnea could not be definitely detected. The infants here concerned may further have a greatly increased hydrogen ion concentration in the blood serum; and the acidosis may also be revealed by a diminution of the alkali reserve of the serum, an increase in the amount of alkali required to alter the reaction of the urine (alkali tolerance), and by a diminution of the combining power of the hemoglobin with oxygen.

The time has passed when all types of acidosis are to be interpreted in the same way. Howland and Marriott have furnished reason for believing that in the cases of infantile diarrheas to which they refer the acidosis is not due to the presence of acetone bodies. It has not been demonstrated that it is due to loss of base. Probably it is due to deficient excretion of acid phosphate by the kidneys. At any rate, this at present appears to be the most likely explanation. It is known that in severe diarrhea, the urinary secretion may be markedly diminished even to the point of complete anuria, the kidney becoming functionally more or less inactive, even though no organic changes may be present. That diminished acid excretion and consequent retention of acid phosphate in the body fluids would occur under these conditions would seem probable. In support of the hypothesis is the finding of an increase in the phosphate content of the blood serum in the course of severe diarrhea.

The hypothesis outlined suggests a tentative method of treatment. All measures should, of course, be used to prevent the cessation of renal activity, especially since the secretion of urine is often very scanty and often ceases for hours at a time. The best of all procedures is the constant administration of water or salt solution by mouth if possible; if vomiting prevents this, as it frequently does, water must be given by rectum, subcutaneously or intravenously. But beyond these obviously desirable measures, as well as the accepted methods of controlling the excessive diarrhea itself, the existence of an acidosis, as seen in the hyperpnea or other more accurate signs, should be energetically combated. Alkalies, such as sodium bicarbonate, must be freely administered in any effective way until the reaction of the blood is again normal. Large doses may be required. The results of such treatment, vigorously applied, are reported to be encouraging. As Howland and Marriott point out, the condition resulting from the acidosis or accompanying

1. Howland, John, and Marriott, W. McKim: Acidosis Occurring with Diarrhea, Am. Jour. Dis. Child., May, 1916, p. 309. Preliminary reports on this subject have been made in the Proceedings of the Society for Experimental Biology and Medicine, 1914, xii, 51, and in the Bulletin of Johns Hopkins Hospital, 1916, xxvii, 63.

2. For a discussion of the significance of carbon dioxid tension in the alveolar air, see Peabody: Am. Jour. Med. Sc., 1916, cli, 184. Howland and Marriott: Bull. Johns Hopkins Hosp., 1916, xxvii, 63.

it is most serious even if its exact nature is not understood. Therefore, they add, in all cases of severe diarrhea, even though there are no evidences of acidosis, it is advisable to use sodium bicarbonate until the urine is alkaline. Its administration may prevent the development of acidosis. When further observations have made clear the processes on which the acidosis depends, we may be able to direct our treatment more intelligently. At present we are forced to combat the result and not the cause. It is certainly a helpful step in the direction of progress, however, to have some scientifically justifiable evidence on which to base a therapeutic program for these severe diarrheas, even if further researches shall lead to a modification or reversal of the plan of treatment.

VACCINE TREATMENT

Looking backward over the development of active immunization by vaccines during the last fifteen years, we appear to be at the termination of one epoch in the therapeutics of infectious disease. In this issue, Hektoen[1] traces the stages by which vaccines which were first employed with attempted scientific control have come into indiscriminate and unrestrained use, with no guide beyond the statements which commercial vaccine makers are pleased to furnish with their wares. Already most physicians are realizing that the many claims made for vaccines are not borne out by facts, and that judging from practical results there is something fundamentally wrong with the method as at present so widely practiced. As clearly shown by Hektoen, "the simple fact is that we have no reliable evidence to show that vaccines, as used commonly, have the uniformly prompt and specific curative effects proclaimed by optimistic enthusiasts and especially by certain vaccine makers, who manifestly have not been safe guides to the principles of successful and rational therapeutics."

But out of this wild period from which we are emerging there have come certain benefits which promise to be more or less permanent. The study of prophylactic immunization against typhoid and other similar diseases has been fostered, and the time of attainment of its present efficacy perhaps hastened; the effects of active immunization in accelerating the development of immunity and recovery in certain chronic localized infections of known etiology have been studied; the search for sources of infection from which autogenous vaccines could be obtained has led to a more careful examination of patients, who have thus been indirectly benefited by having the source of their troubles discovered and removed.

It has been difficult for most physicians to distinguish between the relatively limited field of prophylactic immunization in which scientifically controlled experiments and carefully observed and analyzed results have confirmed the claims of the method, and the other field of the use of vaccines in which mixtures of bacteria and their products have been indiscriminately introduced into patients suffering from all manner of disease, infectious and noninfectious, acute and chronic, without study of the patient, or knowledge of the etiology or pathology of the disease. But the latter use of vaccines cannot be condemned merely on the ground of its empiricism. As Theobald Smith has said, "We cannot do without empiricism wholly. We owe valuable suggestions and discoveries to it. These are like clearings in the forest unconnected with other clearings, but destined to become the nucleus of a healthy scientific growth." When, however, it becomes evident that empiricism has run riot, that it has wholly divorced itself from scientific control, and when, in addition, its results, impartially reviewed, are shown to be unbeneficial, we must conclude that such a clearing has been badly located, and that it never can occupy a worthy place on the highway of scientific medical progress.

In regard to the more recently developed methods of intravenous therapy in typhoid fever, Hektoen points out that certain new concepts and theories are introduced which need diligent study and correlation before their application to the problem can be settled. Here again we find ourselves in another pioneer clearing in an unexplored forest. Only the future can determine whether this clearing is to become a useful station, or whether after a brief existence as a point of interest it will prove to be far removed from the thoroughfare of legitimate travel. Certainly the development here should proceed cautiously.

Already a similar procedure has been introduced for the intravenous treatment of other subacute and chronic infectious diseases, such as arthritis, and some observers have asserted that the amelioration of the symptoms in the joints following the treatment is sufficient to establish it as a worthy routine treatment. The fact that in the subjects of arthritis and even in normal persons the intravenous injection of bacterial or other protein is followed by a rather characteristic sequence of phenomena of fever, chill and leukocytosis by no means stamps the method as a justifiable type of empiricism. Indeed, other observers have noted that patients so treated relapse, and that the number of those who do not relapse is apparently no greater than the number of untreated patients who recover spontaneously. Such treatment, ineffective in itself, actually hinders recovery by distracting attention from the search and removal of the cause of the arthritis.

The fact that much time and effort of the past ten years appear now to have been wasted, so far as positive results go, should make us doubly cautious in accepting a new and somewhat similar procedure until opportunity has been afforded for its verification under conditions favorable for scientific control.

1. Hektoen, Ludvig: Vaccine Treatment, THE JOURNAL A. M. A., this issue, p. 1591.

FACTORS CONCERNED IN WATER PURIFICATION

The amount of water needed by large communities for varied purposes is decidedly greater than is suspected by those not familiar with the problems of municipal water supplies. The estimates made in different cities to meet all legitimate requirements place the quantity at not less than 750 quarts a head, daily. A large part of this is, of course, devoted to other than domestic purposes — to manufacturing, sprinkling and fire protection, for example. Such water would not necessarily be expected to have the same degree of purity as that required for household uses and drinking purposes. As usually it is not convenient or practicable to have separate supplies for the specific needs in the present stage of water supply management, the source of supply must generally be considered as a single problem. The surface area that is necessary in order to furnish a supply sufficient for a large city is correspondingly enormous.

As a result of these conditions, not infrequently watersheds which provide the larger supplies cross the borders of individual states. The problems of pollution thus become complicated by the intricacies of interstate relations, which are frequently the subject of legal and political disagreement. An exceptionally prominent instance is afforded in the case of the city of Washington. This is outside the jurisdiction of the surrounding states. It derives its water supply from the Potomac River, which drains an area extending into several states. The city discharges its sewage products ultimately into the same stream, which, in turn, is the source of edible shellfish that can carry infection. A comprehensive examination of the sanitary problems of the Potomac River, therefore, has features of widespread importance. It involves the question of pollution, direct or indirect, of navigable waters of the United States, and implicates certain sanitary features which because of their magnitude or character, are national in scope, and the solution of which devolves on the federal government.

Several years ago a comprehensive study of the subject was undertaken by the U. S. Public Health Service. This study was prompted by the publication of statements to the effect that the sewage from the city of Washington and other communities along the Potomac River polluted the waters of the lower river, producing danger of water-borne diseases, such as typhoid fever, by the eating of raw oysters taken from the oyster beds in the lower river. These beds are extensive, as they may be found from Lower Cedar Point, about 65 miles below the sewer outlets of Washington, to the mouth of the river, which is about 100 miles below the outlets. The District of Columbia was interested both because many of the oysters from the lower river are distributed and consumed in Washington, and because suggestions had been made that an elaborate sewage-disposal plant, to cost several million dollars, be installed for the treatment of Washington sewage. Although many exhaustive studies of pollution of rivers and shellfish beds and many studies of industrial wastes have been made, few if any investigations have included the study of an entire river over a period of a year, and a still smaller number have embraced so many of the problems involved in the pollution of rivers.

The coordinate effort of the federal government to collect and interpret sanitary data of the Potomac River as a whole so that the interplay of the various factors could be comprehensively understood is timely. It is an appropriate extension of earlier important, though far less comprehensive, examinations of more limited questions, such as the influence of the water supply on the prevalence of typhoid fever in the District of Columbia.[1]

The Hygienic Laboratory of the U. S. Public Health Service has now made public the results of the investigation[2] of the pollution of the Potomac River and its tributaries which was begun by the Public Health Service June 2, 1913, and continued until May 31, 1914. The investigation included a sanitary survey of the Potomac River watershed and laboratory studies of the water, mud, plankton and shellfish. The sanitary survey included investigations as to the number of persons on the watershed, the prevalence and distribution of typhoid fever, the water supplies, sewage-disposal systems, and character and amounts of trade wastes.

As a result of the survey, it was found that about 94.7 per cent. of the population were served by public water supplies, and that a smaller proportion, 38 per cent., were served by sewage-disposal systems. While typhoid fever was especially prevalent throughout the upper basin, the installation of water and sewerage systems and the increased activity of state and municipal health authorities have been followed by a decreasing typhoid rate, especially in the urban population, and the disease is now chiefly a rural one.

Among the more detailed findings in the report on the Potomac problem is the evidence that at no point above Washington is the water of the Potomac River safe for use as a public water supply without reasonable treatment. Even during the period of lowest stream flow and highest temperature, the river in the area of heaviest pollution — that is, between Giesboro Point and Fort Foote — has at all times sufficient oxygen available for the sewage now discharged into the

1. Rosenau, M. J.; Lumsden, L. L., and Kastle, J. H.: Report on the Origin and Prevalence of Typhoid Fever in the District of Columbia, Bull. 35, Hyg. Lab., U. S. P. H. S.; Report No. 2 on the Origin and Prevalence of Typhoid Fever in the District of Columbia, Bull. 44, 1907; Report No. 3 on the Origin and Prevalence of Typhoid Fever in the District of Columbia, Bull. 52, 1908. Lumsden, L. L., and Anderson, J. F.: Report No. 4 on the Origin and Prevalence of Typhoid Fever in the District of Columbia, Bull. 78, 1909.

2. Cumming, H. S.: Investigation of the Pollution and Sanitary Conditions of the Potomac Watershed, Bull. 104, Hyg. Lab., U. S. P. H. S., 1916.

river, and enough to take care of the sewage which will probably be added for several years to come.

Oysters in the lower reaches of the Potomac River form the basis of a large and important industry. Large numbers of men gain a livelihood from this source, and the product is shipped, chiefly through Washington and Baltimore, to many parts of the country. In order to protect the ultimate consumers of the oysters, and thereby protect the industry itself, it is essential that the sanitary quality of the shellfish be known, and when necessary improved and protected. The oyster beds extend from the mouth of the river about half way to the city of Washington. In the upper few miles they are used almost solely for the growth of spat, and the oysters developing here are used chiefly for planting the lower beds, and rarely reach marketable size. From data on pollution and purification of the river, detailed in the preceding sections, it is evident that by the time the water reaches the area of the oyster beds it has undergone its maximum purification. Although during the winter months the increased stream flow shortens the time during which purifying agencies may act, any anticipated danger of pollution of shellfish from this cause will be shown to be without foundation. It is gratifying to learn that in an examination of oysters from all the beds in the whole river and its tributaries, extending over an entire season, no dangerously polluted oysters were found in the Potomac River proper. The very few polluted samples found came from localities from which few oysters are shipped.

The government bacteriologists have pointed out that the factors concerned in the purification of streams as it occurs in Nature are many, but are reducible on analysis to two main elements — the dying off of the bacteria of pollution and the oxidation of the organic constituents. All agencies of purification require time for their action, and in flowing streams it is important to appreciate the fact that it is the distance in time between successive points of observation and not the distance in miles which is significant. Moreover, the death rates of bacteria in water and the rapidity of oxidation are influenced by the temperature.

The report of the Hygienic Laboratory concludes that notwithstanding the especially favorable natural conditions attending the present disposal by dilution of the sewage of the District of Columbia, it is inevitable that, in consequence of a continued increase in the population of the District of Columbia, the capacity of the river to dispose of sewage without nuisance or danger will eventually be overtaxed. It is desirable, therefore, that primary treatment works should be installed in the near future sufficient to clarify the sewage up to the limits to which plain sedimentation may advantageously be carried. The cost of construction and operation of these treatment works would not be such as to be prohibitive when considered in connection with the benefits to be derived. They should be so designed as to work in harmony with the favorable conditions locally afforded by Nature for sewage disposal. These works should be sufficient to maintain a reasonable constant as to the amount of organic matter dependent on the river for purification. Their construction is also desirable in recognition of the advancing standards as to hygienic cleanliness of river waters, as well as for the example in such matters which should be afforded by the national capital.

STRAY DOGS, THE PUBLIC HEALTH AND PUBLIC DUTY

The association of rabies with the presence of our canine population was one of the first experiences which brought home the possible necessity of paying some attention to the uncurbed liberty of this loved and hated domestic animal. Rabies appears as an easily preventable disease when one recalls that such a minor restraint on the dog as muzzling was sufficient to eradicate it from England. By rigid enforcement of muzzling ordinances, rabies has also been practically or completely eradicated from the Scandinavian countries.

Although the foregoing feature of danger and the possibility of relief are at length rapidly being appreciated in the United States, it is not equally understood that the dog may also be of major importance as a carrier of parasites dangerous to man and the domestic animals. A zoologist in the Bureau of Animal Industry[1] has compiled the list of important diseases and parasites which are conveyed by the dog to man and the domestic animals, and which are present in this country: rabies in man and stock; hydatid in man and stock; gid in stock (and possibly also in man); muscular cysticercosis, or so-called "measles," in sheep; muscular cysticercosis, or "measles," in reindeer; cysticercosis of the liver and mesenteries in stock; tapeworm in man, especially in children; roundworm in man; tongueworm in man and stock, and fleas and ticks which transfer from dog to man and which may in this way transmit disease and parasites. Furthermore, in the recent outbreak of foot-and-mouth disease, it was determined beyond any reasonable doubt that dogs were responsible in some instances for the spread of the disease, not only from one farm to another, but also from one state to another.

It is unnecessary to elaborate the details of the harmful results here indicated as a possible outcome of the unrestrained wanderings of "man's faithful servant." We must not let either a maudlin sentiment or an unwholesome indifference blind us to the duty of modern communities and the rights of their citizens to live amid a minimum of preventable menaces

1. Hall, M. C.: The Dog as a Carrier of Parasites and Disease, Bull. 260, U. S. Dept. Agric., Nov. 23, 1915.

to health and happiness. The family dog, properly restrained and kept where he will not even become a potential danger to the other members of society, needs no severe indictment at this time. But the case against the unrestricted, vagrant, ownerless stray dog is based, says Dr. Hall,[1] on two counts — that he is a nuisance and that he is dangerous. Speaking with the authority of expert knowledge, Hall adds that the stray dog which recognizes no owner must be eliminated. The irresponsible dog, with no owner to care for him, to look after his health as it concerns the dog and other animals and man, and to restrain him and stand sponsor for his acts and especially the damage he may do, does not fit into a scheme of civilization which is based on law and the responsibility of individuals for themselves and others. Of course, a little serious consideration of the actual hygienic value of a restriction of the dog's unwarranted liberty must suffice to convince any thoughtful person. Usually, however, no reform in established customs can make great headway without a vigorous campaign of education to justify it. Are we not ready for this? Need we hesitate to agree with the government experts that "the time seems to be at hand when the stray dog, the sheep-killing cur, the vagrant carrier of dangerous parasites and of the horrors of rabies should be exterminated? The destruction of such dogs would mean a saving of hundreds of lives and the saving and making of millions of dollars." Let us believe that this is not an age of indifference.

Current Comment

CENSUS BUREAU LIFE TABLES

The Bureau of the Census of the Department of Commerce is about to publish a set of life tables for the United States compiled by Prof. James W. Glover of the University of Michigan. These tables are unique in that they deal with the whole population of the region covered instead of being, as are the actuary tables of insurance companies, restricted to selected lives. Death rates and the expectation of life are shown, at all ages, for the population of the original death registration states, namely, the six New England states, New York, New Jersey, Indiana and Michigan. The basis of computation is the population as shown by the census of 1910 and the mortality for the years 1909, 1910 and 1911. Examination of these tables brings out, once more, the familiar fact of the greater longevity of women. It is shown that, taking all races together, the expectation of life of a female at birth is more than three and one-half years greater than that of a male. This difference persists throughout life, and in the case of native white persons, up to the age of 94. The death rate in the first year of life is more than 20 per cent. higher among native white boys than among girls. Of equal importance and interest are the figures for infantile mortality; 5 per cent. of native white boys and 4 per cent. of girls die in the first month; 12.6 of the former and 10.5 of the latter during the first year. This high rate falls for both sexes to a minimum about the twelfth year, after which it again rises gradually. The relatively lower mortality among rural residents is strikingly brought out by these tables. The expectation for white males at birth in rural localities is 7.7 years greater than in cities. At the age of 39 there is still a margin of five years in favor of the country. Thereafter the difference diminishes, but the country holds the lead until the age of 88, when the urban residents commence to have slightly the advantage. These few figures have been extracted to illustrate the nature of these remarkable tables. The bulletin in which they are published contains sixty-five pages of information of direct interest and utility to the physician, and is offered by the government to the medical profession gratuitously.[1] These tables are intended primarily to be of service as a source of information to the public. They should be particularly useful to public health officials, students of vital statistics, physicians, sociologists, actuaries, statisticians and others interested in the improvement of the public health of the nation. Their uses for legal purposes, valuation of reversions, annuities, retirement funds and old age pensions are obvious.

KIDNEY METABOLISM IN NEPHRITIS

The ultimate source of the work done in the process of secretion by glandular tissues lies in the chemical energy utilized in the cellular functions. It is not an easy task to estimate this change in a quantitative way. The energy at the disposal of the cells is derived from the oxidation of complex organic compounds to products of low chemical potential value, such as carbon dioxid and water. Oxygen is requisite for the continuance of such activities; and the measurement of oxygen consumption by a gland gives some indication of the nature and extent of its cellular reactions. The expenditure of energy required for a particular sort of activity can be determined indirectly by measuring the difference between the oxygen consumption of the resting and the active organ under investigation. Most of our knowledge in this field is due to the work of the English physiologist Barcroft and his co-workers. Their measurements consisted essentially in determining the oxygen content of the arterial blood supplied to this organ, and the oxygen content of that leaving it by the vein, together with the amount of blood passing in a given time. In a study of the gaseous metabolism of the kidney, Barcroft and Brodie[2] found that, taking all the experiments together, the output of carbon dioxid was equivalent to that of the oxygen taken in. The respiratory quotient, CO_2/O_2, is therefore practically unity, as it would be from the oxidation of carbohydrate alone. This result supports the belief that the substance oxidized in the functioning kidney is of a carbohydrate nature and that it is completely oxidized in

1. A copy may be obtained on application in writing to Mr. Samuel L. Rogers, director, Bureau of the Census, Washington, D. C.
2. Barcroft, Joseph, and Brodie, T. G.: The Gaseous Metabolism of the Kidney, Jour. Physiol., 1905, xxxiii, 52.

the processes connected with secretion. It is not unlikely that glucose is here concerned. Recently the known facts regarding the vascular and metabolic conditions in the kidneys have been extended by an investigation of the oxygen consumption in nephritis of the type induced in rabbits by uranium salts.[3] In these cases the histologic examination of the kidneys showed that the spaces round the glomeruli were much enlarged, the glomeruli themselves being shrunk. There was some breakdown of the convoluted tubules, the other parts of the tubules being unimpaired. The blood vessels contained an abnormal quantity of blood, the corpuscles in many cases forming a lining to the vessels. In spite of this fact the blood flow was if anything faster than in the normal rabbits, the oxygen consumption was lower (0.046 c.c. per gram per minute as compared with 0.082 c.c.), and the venous blood emerging from the kidney was markedly redder. The evidence thus obtained in the domain of cellular metabolism corroborates the known facts regarding the lessened work of the nephritic kidney as judged by quite different criteria.

THE TYPHOID RATE IN PITTSBURGH

Owing to a misstatement in the number of deaths originally reported to us by the office of the Department of Public Health, Pittsburgh, the rate for this city for 1915 appeared in our recent summary as much higher than was actually the case. The number of deaths as first reported to us was 159. The actual number, as given to us this week in a letter from Dr. Edwards, director of the Pittsburgh Department of Health, was 59. The rate should consequently be 10.3 instead of 24.7. This correction raises Pittsburgh from ninth to seventh place in Group 1, and marks the lowest point reached in the history of the city. Although this error was not made in THE JOURNAL office, we are glad to give special publicity to the excellent record made by Pittsburgh in 1915. The corrections in other averages, made necessary by the newer return from Pittsburgh, will be made in our next summary.

3. Tribe, E. M., and Barcroft, J.: The Vascular and Metabolic Conditions of the Normal Kidney in Rabbits, Jour. Physiol., Proc. Physiol. Soc., Jan. 22, 1916, p. x. Tribe, E. M.; Hopkins, F. G., and Barcroft, J.: Vascular and Metabolic Conditions in Kidneys of Rabbits Injected with Uranium Acetate, ibid., p. xi. Tribe, E. M.; Harvey, W. H., and Barcroft, J.: Vascular and Metabolic Conditions in Kidneys of Rabbits Injected with Diphtheria Toxin, ibid., p. xii.

Death Rates.—It should not be understood, however, that the death rate from the infectious diseases is a measure of individual, so much as of community, intelligence. In this country the wonderful reduction in the death rate from infectious diseases in the past fifteen years has been confined largely to the great cities. Smaller cities, villages and rural communities have improved but little. The larger cities are establishing effective health departments. Building regulations prevent the construction of unsanitary houses, either public or private. Schoolchildren are inspected by competent medical men and first cases are detected and isolated. Proper hospitals for the infectious diseases are provided and scientifically administered. The children of the poorest and most ignorant go to sanitary school buildings and when infected, are scientifically treated. The health officer of the smaller city is a joke and that of villages and rural communities exists, for the most part, only in name.—Vaughan.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST; SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

ARKANSAS

Eradication of Malaria.—Two communities in the state, one urban and one rural, namely, Crossett, Ashley County and a district in Chicot County, including the Red Leaf plantation, have been selected as sites for the model demonstration areas for the control and eradication of malaria, under plans outlined by Surg. Rudolph H. von Ezdorf, U. S. P. H. S. The work will be along the lines of drainage, screening and the eradication of mosquitoes. The supervision will be maintained for two years and it is expected to demonstrate that malaria can be eradicated by making each of the test communities 100 per cent. proof against malaria.

State Society Meeting.—The fortieth annual meeting of the Arkansas Medical Society was held in Texarkana, May 2 to 4, and the following officers were elected: president, Dr. Merriman L. Norwood, Lockesburg; vice presidents, Drs. James M. Lemons, Pine Bluff; W. A. Purifoy, Chidester, and William R. Brooksher, Fort Smith; secretary, Dr. Clinton P. Meriwether, Little Rock (reelected); treasurer and editor of the *Journal of the Arkansas Medical Society*, Dr. William R. Bathurst, Little Rock (reelected); councilors, second district, Dr. Joseph C. Cleveland, Bald Knob; fourth district, Dr. William Breathwit, Pine Bluff; sixth district, Dr. John H. Weaver, Hope; eighth district, Dr. Earle H. Hunt, Clarksville, and tenth district, Dr. Joseph T. Clegg, Siloam Springs (reelected); delegate to the American Medical Association, Dr. Clinton P. Meriwether, and alternate, Dr. Robert Caldwell, both of Little Rock. Little Rock was selected as the place of meeting for 1917.

Free Clinic at Hot Springs.—Through the efforts of Dr. Loyd Thompson of Hot Springs and Dr. William P. Parks, superintendent of the United States Hot Springs Reservation, a free clinic has been established at the government free bath house. The purposes of this clinic are to furnish free medical aid to the indigent patrons of the government free bath house, to study the clinical efficacy of the waters of the Hot Springs and to exclude from the bath house cases which might menace the safety of its patrons. The following clinics will be maintained for the present: medical, dermatologic and syphilis, genito-urinary and neurologic. The medical clinic will be under the direction of Drs. William H. Deaderick and John M. Proctor; the dermatologic and syphilis clinic under the direction of Dr. Loyd Thompson; the genito-urinary clinic under the direction of Drs. Edward H. Martin and Ernest A. Purdum, and the neurologic clinic under the direction of Dr. James L. Greene. Assistants to the various clinics will be chosen from among the physicians of the city. Dr. William H. Deaderick was elected chief of the clinic and Dr. Loyd Thompson, secretary.

DISTRICT OF COLUMBIA

Washington's Baby Week.—Baby Week was scheduled to close on May 13, but to meet a popular demand the exhibit was kept open on Sunday, May 14, and ministers, physicians and others delivered addresses there on that day. A novel feature of Baby Week as celebrated in Washington was a portable exhibit, in charge of a trained nurse, used for demonstrations in various parts of the city. This served not only to instruct those who saw it but also to interest them and their friends and acquaintances in the Baby Week exercises generally.

ILLINOIS

State Laboratory Branch Opened.—A new branch laboratory of the state board of health was opened, May 15, at Champaign under the charge of Dr. F. S. Sperry. The new laboratory is to be known as the East State Laboratory.

Personal.—The Crane Company of Chicago is making extensive improvements at its sanatorium, Buffalo Rock. Dr. Andrew M. Harvey, Chicago, is in active charge and has taken up a plan with the company for the housing of women and children and families. Heretofore, provision has been made only for men.——Dr. John T. Montgomery, Charleston, formerly a trustee of the State University, is reported to be critically ill as the result of a fall.

Chicago

Tuberculosis Sanatorium Changes.—Dr. Martin I. Marshak has resigned from the staff to become superintendent of the Jewish Consumptive Relief Society Sanatorium, Edgewater, Colo.; Dr. Francis F. Callahan has accepted a position on the staff of the Sea View Hospital, New York; Dr. Arthur G. Compton is now a member of the staff of the Washington (D. C.) Consumptive Hospital, and Dr. Robert G. Allison has notified the directors that he will leave in a few days to become superintendent of the Pokegema Sanatorium near St. Paul.——Dr. John W. Coon will, it is understood, build and manage a private tuberculosis sanatorium in the lake region of Waukesha County, Wis.

INDIANA

Health Conference.—The twenty-second annual conference of health officers of Indiana was held in Indianapolis, May 2 and 3, with an attendance of about 300.

County Tuberculosis Hospital.—Bids were opened, May 2, for the construction of a tuberculosis hospital for Marion County, near Oaklandon. The contracts apply to the erection of an administration building with two lateral wings, one for male and one for female patients, the two wings to accommodate eighty patients. The bids for the general construction varied from $55,183 to $66,469.

Personal.—Dr. Charles P. Emerson, dean of the Medical Department of Indiana University, delivered an address before the Saturday Lunch Club of the Indianapolis Chamber of Commerce, March 6, on "The Physician's Duty to the Community."——Dr. Walter H. Baker, South Bend, who has been ill with septicemia due to an infected wound of the hand, is reported to be improving.——Dr. Bernard J. Larkin has been retained by the Indianapolis Board of Health to investigate conditions in factories and too closely populated districts for sources of trachoma.

IOWA

Hospital News.—The Serving Sisters of the Holy Ghost of Techny, Ill., have begun the erection of a new hospital at New Hampton. The building will be fireproof and modern, and will represent an outlay of about $75,000.——The new Marengo Hospital opened to receive patients, May 1, under the charge of Drs. Erie N. Brown and Ira N. Crow, Marengo, and Charles A. Manahan, Brownsdale, Minn.——The State Board of Education has authorized that work be begun as soon as possible on a hospital building to be erected at the Iowa State College, Ames. The structure was authorized by the last general assembly, and will cost about $35,000.

Personal.—Dr. Charles W. Ellyson, Alta, has disposed of his practice to Dr. David A. Herron of Comfrey, Minn., and, after taking a postgraduate course, will locate in Waterloo. ——Dr. William A. Stoecks, Davenport, has been appointed city physician.——Dr. Harris A. Newell, assistant surgeon of the Iowa Soldiers' Home Hospital, Marshalltown, has resigned, becoming effective May 1.——Dr. Alfred O. Williams, Ottumwa, was given a dinner by the Wapello County Medical Society in appreciation of his forty years of service as a physician in Ottumwa. Dr. Williams was presented with a silver loving cup.——Dr. Mary K. Heard has resigned her position in the eye, ear, nose and throat department of the university, to devote her entire time to practice in Iowa City.——Dr. Clifford L. Bartlett, instructor in pathology and bacteriology in the University of Iowa, Iowa City, has resigned and accepted a position as bacteriologist in a hospital in Clinton.

State Society Meeting.—The sixty-fifth annual meeting of the Iowa State Medical Society was held in Davenport, May 10 to 12, under the presidency of Dr. William B. Small, Waterloo. On Wednesday evening an address on "Cardiac Pain" was delivered by Dr. Alexander Lambert, New York. The oration on surgery was delivered by Dr. Henry H. Clark, McGregor, and that on medicine by Dr. Edward T. Edgerly, Ottumwa. Dr. J. Rilus Eastman, Indianapolis, delivered the address on surgery, his subject being "The Alimentary Drainage Scheme in Man." The following officers were elected: president, Dr. John F. Herrick, Ottumwa; president-elect, Dr. John N. Warren, Sioux City; vice presidents, Drs. Charles B. Taylor, What Cheer, and Clyde A. Boice, Washington; secretary (to fill the vacancy caused by the resignation of Dr. James W. Osborn, Des Moines), Dr. Tom B. Throckmorton, Des Moines; councilors, third district, Dr. William A. Rohlf, Waverly; seventh district (to fill vacancy caused by death of Dr. Corwin S. Cornell, Knoxville), Dr. Channing G. Smith, Granger; and tenth district, Dr. Watson W. Beam, Rolfe; trustees, Drs. James W. Cokenower, Des Moines, and Dr. Thomas E. Powers, Clarinda (to fill vacancy caused by the election of Dr. Warren to the presidency); delegates to the American Medical Association, Drs. Lawrence W. Littig, Davenport, and M. Nelson Voldeng, Woodward, and alternates, Drs. Daniel H. Bowen, Waukon, and J. Lynn Crawford, Cedar Rapids.

KANSAS

Typhoid at State Hospital.—An epidemic of typhoid fever was reported, April 21, from the Osawatomie State Hospital, where twenty-five cases are said to exist. The state board of health is investigating the cause of the disease.

Health Officers Hold Meeting.—The Kansas State Association of Public Health Officers held a meeting in Kansas City, Mo., April 26, and elected the following officers: president, Dr. Forrest A. Kelley, Winfield; vice president, Dr. Burton K. Kilbourne, Minneapolis, and secretary-treasurer, Dr. J. Carroll Montgomery, Manhattan. A committee was appointed to endeavor to secure needed public health legislation in the state.

Personal.—Dr. Lloyd G. Campbell, senior assistant surgeon at the Soldiers' Home, National Military Home, Leavenworth, has resigned, to take effect May 24, and will practice in Detroit.——Dr. Henry M. Stewart, Hutchinson, who has been for a year at Pass Christian, Miss., has returned to Hutchinson and resumed practice.——Dr. Walter C. Palmer, Hiawatha, has gone to Europe, where he will serve in a war hospital in France.

Semicentennial of State Society.—At the fiftieth annual meeting of the Kansas Medical Society, held in Topeka, May 3 to 5, the following officers were elected: president, Dr. James W. May, Kansas City; vice presidents, Drs. Mervin T. Sudler, Lawrence; Alfred O'Donnell, Ellsworth, and Thomas A. Jones, Liberal; secretary, Dr. Charles S. Huffman, Columbus (reelected); treasurer, Dr. Lewis H. Munn, Topeka (reelected); councilors, first district, Dr. Charles W. Reynolds, Holton (reelected); second district, Dr. Clarence C. Goddard, Leavenworth (reelected); third district, Dr. Hugh B. Caffey, Pittsburg (reelected); fourth district, Dr. O. Portis Davis, Topeka (reelected); fifth district, Dr. William E. Currie, Sterling (reelected); sixth district, Dr. Erastus S. Edgerton, Wichita, succeeding Dr. Archibald D. Jones of the same city; seventh district, Dr. Kirk P. Mason, Cawker City (reelected); eighth district, Dr. Howard N. Moses, Salina (reelected); ninth district, Dr. Chauncey S. Kenney, Norton (reelected); tenth district, Dr. David R. Stoner, Quinter (reelected), and eleventh district, Dr. John A. Dillon, Larned (reelected); delegates to the American Medical Association, Drs. Oliver D. Walker, Salina, and William F. Sawhill, Concordia. The society adopted a resolution advocating the asexualization of all sexual perverts and degenerates of criminal tendencies. Dr. Fred H. Albee, New York, delivered an address on "Bone Grafting." Dr. Bransford Lewis, St. Louis, gave a lantern slide review of cystoscopic methods in the diagnosis and treatment of ureteral stone and stricture, and Dr. George W. Crile, Cleveland, spoke on "The Method and Results of Surgery of the Stomach and Intestines."

MARYLAND

Dr. Winslow Honored.—A testimonial bespeaking his activity and efficiency in medicine and as a teacher of medicine was presented to Dr. Randolph Winslow, May 8, when he celebrated his twenty-fifth anniversary as a member of the faculty of the University of Maryland, at a complimentary dinner at the Belvedere Hotel, Baltimore.

Higher Preliminary Requirement.—A report from the secretary of the Maryland Board of Medical Examiners states that beginning with January, 1918, two years of college work will be required as the standard of preliminary education for all students matriculating in medical colleges recognized by that board. This will apply to all graduates after Jan. 1, 1922.

Japanese in Baltimore.—Dr. Yasuo Ikeda and Dr. Ginsuburo Totani, Japanese physicians, the former connected with the Imperial University at Tokyo and the latter with the Imperial University at Kioto, have arrived in Baltimore to inspect the Johns Hopkins Hospital. They are on their way back to Japan after having done research work at Cambridge University, England.

Personal.—Dr. Frederick Williams has been appointed one of the health wardens of Baltimore, to succeed Dr. John F. Byrne, who resigned to take up duties in the surgical and medical department of the Baltimore and Ohio Railroad.——

Dr. Robert J. Henry, Glyndon, has been appointed a justice of the peace of the Fourth District of Baltimore County.——Dr. William F. Clayton, Overlea, has been appointed health officer of the fourteenth district.——Dr. James M. H. Rowland has succeeded Dr. William F. Lockwood as dean of the medical faculty of the University Hospital, Baltimore.

Hygiene and Bath Convention.—The fifth annual convention of the American Association for Promoting Hygiene and Public Baths was held, May 9, in Baltimore. Among those who read papers were Dr. Eleanor Keller of the Vanderbilt Clinic, New York, who spoke on the effect of baths on backward children; Dr. James A. Nydegger of the U. S. P. H. S., Dr. Donald B. Armstrong, director of the Department of Social Welfare, New York, who spoke on the "Social Aspects of School Hygiene"; Dr. John D. Blake, health commissioner of Baltimore, and Dr. William Burdick, physical director of the Public Athletic League. Dr. Simon Baruch, president of the association, delivered his annual address and spoke on the duties of the association in regard to the furthering of hygiene and cleanliness.

MASSACHUSETTS

Medical Reserve Corps for Massachusetts.—An order has recently been issued by the adjutant general's office establishing a Medical Reserve Corps and specifying the conditions necessary for entrance into the Medical Corps.

Milk and Baby Hygiene Association Appointments.—The board of trustees of the Boston Milk and Baby Hygiene Association has appointed Dr. Charles W. Eliot and Dr. George H. Ellis members of the advisory committee, and has also appointed the following conference physicians: Drs. Richard S. Eustis, William John Hammond, H. Howard Flagg, Harry L. Rothblatt, Williston W. Barker, Harold A. Gale, William W. Howell, Mitchell Sisson, C. R. Draper, Orville R. Chadwell, James K. Wardwell and Hyman Morrison.

Personal.—Dr. Hugh Cabot, professor of surgery in Harvard Medical School, will be the head of the third medical unit of thirteen surgeons which sails for England from New York on the *Andania*, May 20. This unit will continue the work of the second unit, which went to Europe last November. ——Dr. Alphonse H. Pettit, Lawrence, has moved to Ware. ——B. D. Roberts, a student at Harvard and specialist in the line of public health, has been appointed health officer of Oskaloosa, Iowa, succeeding Dr. A. L. Washburn, resigned. ——Dr. William J. Gallivan, Boston, has been appointed a member of the Public Health Council.

Milk Plant Inspected.—On invitation of the proprietors of Hood's West Lynn Milk Plant, a number of physicians inspected the plant, May 3, and after a buffet dinner, Dr. John J. Dowling, superintendent of the Boston City Hospital, spoke on "Safeguarding the Hospital Milk Supply"; Dr. William H. Watters, professor of pathology in Boston University, read a paper on "The Bacteriology of Milk"; Dr. William C. Hanson discussed "Pasteurized Milk as a Food for Infants and Children," and then, after remarks by Dr. Charles H. Hood, a discussion of milk methods was opened by Drs. Nathaniel P. Breed, Lynn, and J. Forrest Burnham, Lawrence.

MICHIGAN

Laboratory Stays at Houghton.—The state board of health, at a recent meeting, by a tie vote refused to reconsider the moving of the State Laboratory for the Upper Peninsula from Houghton.

State Tuberculosis Survey.—A special meeting of the Michigan-Oceano Medical Society was held, April 21, at Muskegon at which the topic for discussion was "The State Tuberculosis Survey."

Sanatorium Notes.—A new tuberculosis hospital unit, to cost $125,000, is to be erected by the city of Detroit. The item has been approved by the Council Committee and Health Committee of the Board of Estimates.——Kalamazoo Free Tuberculosis Dispensary has been discontinued, but the work will be carried on temporarily at the offices of the society in the public library building.

Personal.—Dr. Henry B. Baker, Holland, for many years secretary of the state board of health, delivered an address before the Civics Study Club, Detroit, May 4, on "Early Health Work in Michigan."——Dr. Angus McLean has been elected vice president of the Detroit Board of Health.—— Dr. William A. Wilson, Detroit, has resigned as medical superintendent of the Florence Crittenton Home, after nineteen years of service with that institution.

Mental Clinic.—A clinic for the examination and investigation of mental diseases was held in the Court House of Grand Rapids, May 8, by Dr. Herman Ostrander, superintendent of the Kalamazoo State Hospital, and members of his staff.—— The fourth of the series of outclinics conducted by members of the medical staff of the Kalamazoo State Hospital was held in the Juvenile Court room of the Kalamazoo County building, April 12.

MINNESOTA

Personal.—Dr. Alonzo T. Conley, Cannon Falls, is reported to be critically ill as the result of a cerebral hemorrhage.—— Dr. Herbert L. Hulburd, Morris, is reported to be seriously ill at his home with septicemia due to an infected wound of the finger.

Health Survey.—Surg. George B. Young, U. S. P. H. S., has begun the sanitary survey of Minneapolis, which will be continued throughout May. The work will have to do chiefly with the control of contagious diseases and the safeguarding of the milk supply of the city.

Sanatorium Items.—Application has been made by the Ottertail County Sanatorium Board to the State Advisory Commission for authority to increase its charge of fees from $10 to $15 a week.——The State Board of Control has asked for an additional building, to cost $75,000, at the State Hospital, Fergus Falls, for male tuberculosis patients.——The county boards of Marshall, Pennington and Roseau counties have passed resolutions providing for the erection of a tri-county tuberculosis sanatorium at Thief River Falls, toward the building fund of which Marshall County will contribute $10,000 and the other counties $5,000 each. Drs. Wilhelm S. Anderson, Warren, and Oscar F. Mellby, Thief River Falls, are the medical members of the sanatorium commission.

MISSOURI

Hospital Notes.—Petitions have been presented to the court of Greene County bearing the names of voters who are in favor of calling a special bond election for the erection of a tuberculosis hospital in Springfield.

Site for Tuberculosis Hospital Selected.—The site offered by J. A. Dougherty, Carterville, for a tuberculosis hospital at Jasper County, has been accepted by the County Tuberculosis Hospital Commission. The site is 6 miles from Joplin and a mile north of Webb City. The hospital is expected to cost about $80,000.

Hospital Dedicated.—The Christian Church Hospital, located at Twenty-Seventh Street and the Paseo, Kansas City, was formally dedicated, April 9. The building, equipment and furnishings have cost about $330,000, and there is already an endowment of $150,000. Dr. Jabez N. Jackson delivered an address on behalf of the staff.

Personal.—Dr. Earl H. Welcome has been appointed city physician of Joplin.——Dr. J. Frank Harrison has been elected mayor of Mexico.——Dr. Edgar A. Dulin has been reelected mayor of Nevada.——Dr. John W. Perkins, Kansas City, is reported to be ill at the University Hospital.——Dr. Lake Brewer has been appointed city physician of Ridgeway. ——Dr. Charles E. McBride, city physician at Webb City for eight years, has resigned.——Dr. Thomas C. Unthank has been appointed assistant superintendent in charge of the negro hospital, Kansas City, succeeding Dr. William J. Thompkins.

State Association Meeting.—The fifty-ninth annual meeting of the Missouri State Medical Association was held at Excelsior Springs, May 8 to 10. The second "Health Sunday" conducted by the association was observed May 7, when the pastors of the churches at Excelsior Springs opened their pulpits for members of the medical association to deliver lectures on health topics. The following program was carried out:

Presbyterian Church; 11:00 a. m.; speaker, George H. Hoxie, M.D., Kansas City; subject, Keeping the Body Under.

Presbyterian Church; 8:00 p. m.; speaker, Mazyck P. Ravenel, M.D., Columbia; subject, Prevention Better Than Cure.

First Baptist Church; 11:00 a. m.; speaker, William F. Kuhn, M.D., Kansas City; subject, The Relation of Heredity to Health.

First Baptist Church; 8:00 p. m.; speaker, Jabez N. Jackson, M.D., Kansas City; subject, The Preservation of Health.

Christian Church; 8:00 p. m.; speaker, Charles R. Woodson, M.D., St. Joseph; subject, Protection of the Nervous System of the Young.

Methodist Church; 11:00 a. m.; speaker, Jacob J. Singer, M.D., St. Louis; subject, The Tuberculosis Problem.

Methodist Church; 8:00 p. m.; speaker, Nimrod P. Wood, M.D., Independence; subject, Better Living.

Christian Union Church; 8:00 p. m.; speaker, Thomas F. Lockwood, M.D., Butler; subject, Maternal Impressions and Other Health Items the Public Should Know.

A memorial meeting for members who had died since the last annual meeting of the association was held on the evening of May 8. Among the deceased members were two ex-presidents, Drs. Frank J. Lutz and Walter B. Dorsett, both of St. Louis. The following officers were elected: president, Dr. J. Franklin Welch, Salisbury; first vice president, Drs. Thomas B. M. Craig, Nevada; Reuben Barney, Chillicothe; Roger W. Gay, Ironton; Thomas Chowning, Hannibal; Thomas N. Bogart, Excelsior Springs; councilors, first district, Dr. Eugene L. Crowson, Pickering; tenth district, Dr. Edward S. Smith, Macon; fourteenth district, Dr. Caius T. Ryland, Lexington; sixteenth district, Dr. Edward N. Chastain, Butler; nineteenth district, Dr. Stephen V. Bedford, Jefferson City; twentieth district, Dr. Albert H. Hamel, St. Louis, and delegates to the American Medical Association, Drs. Wilson J. Ferguson, Sedalia; Henry L. Reid, Charleston; William J. Frick, Kansas City. An appropriation of $1,500 was voted for the use of the defense committee and an additional $1,500 was placed in the sinking fund, which now amounts to $2,500. The attendance was 499. The next meeting will be held in Springfield.

St. Louis

Dyer in St. Louis.—At the meeting of the St. Louis Medical Society, April 15, the guest of honor was Dr. Isadore Dyer, New Orleans, who described "Some Interesting Dermatologic Cases" with lantern slide illustrations.

Personal.—Dr. Malvern B. Clopton has returned after service with the American Ambulance, Paris.——Dr. Frederick C. Brooks, for five years medical director of the Employes Mutual Aid Association of the Stix, Baer and Fuller Dry Goods Company, was given a dinner, April 25, by fifty-five members of the association on the occasion of his retirement.

Military Medicine.—A series of lectures on military medicine under the auspices of the St. Louis Medical Society was inaugurated, May 11, when Lieut.-Col. Thomas U. Raymond, M. C., U. S. Army, spoke on "The Military General Hospital"; Lieut. William A. Hardaway, M. R. C., U. S. Army, presided. May 18, Maj. James M. Kennedy, M. C., U. S. Army, spoke on "Medical Service in Campaigns, Including Field Hospitals and Sanitation"; May 25, Capt. Frank N. Chilton, M. C., U. S. Army, will speak on "Medical Service in the Tropics"; on June 1, Lieut.-Col. Thomas U. Raymond, M. C., U. S. Army, will discuss "The Medical Supply of an Army"; June 8, Capt. Will L. Pyles, M. C., U. S. Army, will consider "The Food and Water Supply of an Army and the Disposition of Waste at Camp"; June 15, Capt. Charles E. Freeman, M. C., U. S. Army, will review from a military standpoint "Preventable Diseases, Including Venereal Diseases, Alcoholism and Other Drug Habits," and on June 22, Maj. James M. Kennedy, M. C., U. S. Army, will deliver the final lecture of the series on "The Recruitment of an Army and the Relation of the Medical Department to it, Including Moral, Mental and Physical Training of a Soldier, and the Relation of Clothing and Equipment to the Efficiency of a Soldier."

NEBRASKA

State Association to Meet.—The annual meeting of the Nebraska State Medical Association will be held at Omaha, May 23 to 25, under the presidency of Dr. Edward W. Rowe, Lincoln, with headquarters at the Hotel Fontenelle.

Hospital News.—Bids have been asked by the board of control for the construction of a new three-story building at the Norfolk State Hospital, to accommodate 100 patients. The plans include a large enclosed porch on each floor.——The new hospital recently built at Wayne by Dr. Anson S. Lutgen was opened for inspection, April 7 and 8.

Personal.—Dr. Robert Retzer, dean of the Creighton University Medical College, Omaha, has resigned.——Dr. George E. Charlton, Ingleside, for many years second assistant physician at the Ingleside State Hospital, has been appointed superintendent of the Norfolk State Hospital, succeeding Dr. William D. Guttery.

NEW YORK

Sanitary Officers to Meet.—Saratoga Springs has been selected as the place for the 1916 convention of the New York State Sanitary Officers Association, which will meet in June under the presidency of Dr. Montgomery E. Leary, Rochester.

New York City

Honor to Pilcher.—The celebration of the semicentennial of the entrance into the professional field of Dr. Lewis Stephen Pilcher, Brooklyn, continued from May 11 to 13. On these days surgical clinics were given in all the principal hospitals of the burough. May 12, a banquet and reception was tendered Dr. Pilcher by his associates and friends in the medical profession, in club life and in Grand Army circles.

Red Cross Hospitals.—The New York County branch of the American Red Cross, which has been working for some time for funds to establish three military base hospitals in this city, announces that gifts amounting to $50,000 have been received and that orders have been placed for the equipment of two base hospitals, of 500 beds each. Efforts are now being made to obtain funds for the equipment of the third hospital. Three full staffs of surgeons, nurses and orderlies have been organized for these hospitals under the direction of Dr. George E. Brewer, Dr. George D. Stewart and Dr. Charles L. Gibson.

How to Feed the Family.—This is the title of a little booklet published under the auspices of the Public Health Education Bureau of the Department of Health. It presents a list of foods and the recipes for their preparation which will provide sufficient food for a family of five at a cost of $7.31 per week. Careful attention has been given to the proper balance of the different food elements and the list has been tested practically for about two years by the Social Service Department of the Beth Israel Hospital. The health department is desirous of spreading this knowledge since they find that many instances of malnutrition encountered in the clinics are due to ignorance as to what constitutes a proper diet.

Dr. Jacobi's Birthday.—Dr. Abraham Jacobi celebrated his eighty-sixth birthday anniversary, May 6. A dinner was given in his honor at the Ritz-Carlton by the board of directors of the Hospital for Deformities and Joint Diseases in which Dr. Jacobi has taken great interest from its start in 1907. Contributions of $112,000 were received toward the $1,000,000 fund for the institution. Dr. Jacobi was presented with a gold-handled cane on behalf of the board of directors by Paul M. Herzog. May 6, Dr. Jacobi was the guest of honor at a testimonial dinner given by the New York Yacht Club at which were present more than twenty physicians who have acted as his assistant in the hospital and college in which he has worked.

Baby Week.—The week of May 6 to 12 was Baby Week in this city and in this connection infant mortality studies have been made by Registrar Guilfoy of the department of health which reveal the very remarkable fact that the death rate from congenital defects is greater among babies of the rich than among babies of the poor. The infant mortality rate for the whole city, based on 141,256 births reported during the year, was 98 per 1,000. In several of the better districts of the city only 25 to 50 per 100 die in the first year of life, while in a district inhabited largely by negroes and Italians, 314 babies out of every 1,000 died during the first year of life. The death rate from infectious and diarrheal diseases in nearly all the so-called well-to-do districts is far below the average for the city. In all districts where the colored population represented at least 10 per cent. of the entire population the rates varied from 124 to 314 per 1,000. The reason for the preponderance of deaths from congenital causes among the well-to-do is to be further studied. Dr. Bolduan has suggested that the lafer age at which people of this class marry may prove to be the deciding factor.

OKLAHOMA

Inspection of Schoolchildren.—The state board of health has recently examined 4,000 schoolchildren in Kiowa, Roger Mills and Washita counties and has found that 15 per cent. have defective sight; 12 per cent. defective hearing; 25 per cent. nasal trouble, and 35 per cent. defective teeth.

Personal.—Dr. Walter Penquite, Chickasha, is spending the spring in San Angelo, Texas, on account of his health.——Dr. Edwin W. Van Brunt, Watonga, has been appointed health officer of Blaine County.——Dr. Charles W. Bacon, Yale, fractured both bones of the right forearm while cranking his automobile recently.——Dr. McDonald Looney, Burneyville, who was recently injured by the falling of a horse which he was riding, is convalescent.

PENNSYLVANIA

Insane Patients to Pay.—Reversing the Delaware County Court in three lunatic support cases, Justice Potter of the Supreme Court filed opinions clearing the way for the state

to obtain reimbursement of thousands of dollars for the support and maintenance in the state hospitals of mentally afflicted persons who were admitted as "indigent" but who had estates at the time or who received inheritances subsequently.

Personal.—Dr. Milton C. Dunnick, Shrewsbury, is convalescent after an operation for appendicitis which he underwent recently at the West Side Sanitarium, York.——Dr. George W. Harrington, Hazleton, was seriously injured by a fall down stairs, May 2.——Dr. D. E. Sable, chief of police and fire surgeon of Pittsburgh, was seized with appendicitis, May 4, and removed to the South Side Hospital where operation was performed.——Dr. Malcolm C. Grow, Media, arrived in New York, May 11, after four months' service as surgeon with the Russian army. Dr. Grow has been decorated with the Cross of St. George for bravery and intends to spend seven weeks in this country, and to purchase medical supplies before returning.——Dr. Louis J. Burns, Philadelphia, has been appointed laryngologist to St. Mary's Hospital.——Dr. James M. Torrance of the Hospital for Contagious Diseases has been appointed second assistant physician of that institution.——Dr. Krusen of the Department of Health and Charities has announced three appointments: Dr. Robert G. Torrey to succeed Dr. William Pepper as visiting physician to the Philadelphia General Hospital; Dr. E. J. G. Beardsley, as visiting physician to the Tuberculosis Department of the Philadelphia General Hospital, and Dr. Theodore T. Melnick to be intern at the Philadelphia Hospital for Contagious Diseases.

Philadelphia

Hospital Items.—A $75,000 Lincoln Memorial Building is planned for the Mercy Hospital.——The Friends' Hospital, Frankford, is turning over 900 acres of woodland at Fox Chase to the State Forestry Department as a Forest Reserve. The hospital managers will plant 16,000 trees this year, the state furnishing the saplings.

Health Education Experiment.—Health Director Krusen has announced that an experimental health district is to be established in South Philadelphia so that the plan of health education may be given a thorough trial under municipal direction. The district will be under the supervision of Dr. Krusen and his assistants, and the work to be done will be the intensive education of the people in matters of health and hygiene.

Today and Tomorrow Exhibit.—The West Philadelphia Hospital for Women, the only one west of the Schuykill River which is operated exclusively for women, will have an exhibit at the Philadelphia Today and Tomorrow Exhibition held in the Commercial Museum Building, May 15 to June 10, showing the maternity work done in 1889, when the hospital started, and what is being done today by its staff of women physicians. The hospital has just broken ground for a new $75,000 Maternity Building in connection with its present equipment.

Conference of Teachers of Blind.—A two-days conference of teachers of the blind was held, May 11 and 12, under the auspices of the Pennsylvania Institution for the Instruction of the Blind. Members from Delaware, New Jersey and Maryland were present. The majority of the teachers themselves were sightless. The conference proceedings were in charge of Mr. Maloney, of the Pittsburgh Institute for the Blind, and Dr. L. Webster Fox, of Philadelphia, president of the society. The problem of what to do with children of the "Twilight Zone" was discussed, as education of blind children in public schools is not compulsory and the many children who can see a little have no means of getting an education, for the Pennsylvania schools for the blind do not take children who have more than one tenth of the normal vision owing to the lack of room.

SOUTH DAKOTA

State Medical Society Meeting.—The annual meeting of the South Dakota State Medical Association will be held in Aberdeen, May 23 to 25, under the presidency of Dr. James B. Vaughn, Castlewood, with headquarters at the Elk's Club.

Honor State Hospital Superintendent.—In honor of the twenty-fifth anniversary of the superintendency of Dr. Leonard C. Mead of the State Hospital for the Insane, Yankton, 120 members of the Eighth District Medical Society and other guests assembled at a banquet in the new women's building of the hospital to pay tribute to Dr. Mead. A number of eulogistic addresses were delivered, and a handsome loving cup was presented by the society to Dr. Mead.

CANADA

Hospital News.—Western University, London, Ont., is organizing a stationary hospital for overseas service. Dr. Edwin Seaborn is commanding officer with the rank of lieutenant-colonel. Dr. Clarence E. Brown, London, is senior major, and Dr. John Cameron, Wilson, who has just returned from France, is junior major. The captains are Drs. James Moriarty, Mimico, and Dr. Ernest H. Young, Kingston.

University of Toronto Base Hospital.—The report that this hospital was to be moved to France proves incorrect. The hospital will remain at Saloniki for some time to come. Its position, however, has been changed. It is now on the east side of Saloniki, 10 miles from its former position, and is situated on a promontory of land with a bay on each side. This hospital is said to have done magnificent work, as have the other Canadian hospitals.

Personal.—Col. Murray MacLaren, M.D., St. John, N. B., Commanding Officer of No. 1 Canadian General Hospital, has been appointed deputy director of the Canadian Medical Services.——Dr. Walter S. Verral, Vancouver, M. C., has been appointed superintendent of the Toronto Orthopedic Hospital, in succession to the late Dr. B. E. Mackenzie.——Capt. S. G. Chown, Winnipeg, Man., has been appointed Advance Department Medical Officer in France.——Dr. G. Stirling Ryerson, Toronto, has resigned the presidency of the Canadian Red Cross Society.

Untrained Midwives in Toronto.—Dr. Edmund E. King, vice president of the Ontario Medical Council, and a member of the Council of the Academy of Medicine, Toronto, addressed the medical commission on behalf of these bodies recently with regard to the proposal to license midwives in Ontario. Dr. King told the commissioner that there were no licensed midwives in Ontario, and that it was a dangerous thing for mother and babe to have an untrained woman in attendance on them. He further said that untrained women did much work among the foreign population in Toronto with unfortunate results. The opinion seems to prevail among practitioners in Ontario that if midwives are to be licensed that an act should be framed so as to copy the act now in force in Great Britain.

GENERAL

Correction.—The general superintendent of the Medical Department of the United Fruit Company writes that the obituary notice of Dr. Francis T. B. Fest, which appeared in THE JOURNAL of April 8, was incorrect in two particulars: Dr. Fest had been an assistant surgeon in the service of the United Fruit Company and had resigned from the service in December, 1913.

Pharmacopeia Adopts Metric System.—The revised edition of the United States Pharmacopeia, now in preparation, will make exclusive use of the metric system and in order to aid in its transition, the United States Bureau of Standards has prepared a circular on weights and measures for pharmacist and physician. The bureau has also furnished the committee on revision of the Pharmacopeia with definitions of the several degrees of fineness of drug powders and methods to be used in their determination.

Immunologists Convene.—At the third annual meeting of the American Association of Immunologists held in Washington, D. C., May 11 and 12, under the presidency of Dr. James W. Jobling, Nashville, Tenn., Dr. Richard Weil, New York, was elected president; Dr. John A. Kolmer, Philadelphia, vice president; Dr. Martin J. Synott, Montclair, N. J., secretary (reelected); Dr. Willard J. N. Stone, Toledo, Ohio, treasurer (reelected), and Drs. William H. Park, New York, and Arthur F. Coca, Flushing, L. I., were elected councilors.

Conference of U. S. Public Health Service with State Health Officers.—The fourteenth annual conference of the U. S. Public Health Service with state and territorial health authorities was held in Washington on May 13 and 15. Representatives of twenty-three states and territories were present. Among the more important topics discussed were uniformity of interstate and intrastate regulations for the prevention of the spread of communicable diseases through common carriers, the collation and use of morbidity reports, and health insurance.

Throat, Nose and Ear Men Elect.—At the annual meeting of the American Laryngological, Rhinological and Otological Society, held in White Sulphur Springs, W. Va., May

5 and 6, under the presidency of Dr. Seth M. Smith, Philadelphia, the following officers were elected: president, Dr. Thomas J. Harris, New York; vice presidents, Drs. John F. Culp, Harrisburg, Pa.; John E. Brown, Columbus, Ohio; Richmond McKinney, Memphis, Tenn., and James A. Patterson, Colorado Springs, Colo.; secretary, Dr. William H. Haskin, New York, and treasurer, Dr. Ewing W. Day, Pittsburgh.

Conference of State and Provincial Boards of Health.—The annual conference of secretaries of state and provincial boards of health was held in Washington on May 16. This is a voluntary association of the health agencies of the several states of the United States and of the provinces of Canada. In that respect it differs from the annual conference of the health agencies of the states and territories with the United States Public Health Service, referred to elsewhere in this issue, which is a strictly official organization, created by the law under which the Public Health Service is now organized.

Community Experiment on Tuberculosis.—The National Association for the Study and Prevention of Tuberculosis has been presented with $100,000 by the Metropolitan Life Insurance Company to demonstrate by a community experiment, for three years, that tuberculosis can be controlled as any other infectious disease, if right methods and adequate resources are available. It is planned to select a town or city of about 5,000 inhabitants, probably in New York or Massachusetts, and to apply there all the knowledge and treatment of tuberculosis available with a view to the ultimate eradication of the disease.

U. S. P. H. Service Personal.—Senior Surgeon Fairfax Irwin began a month's tour of inspection of the coast guard service along the New Jersey coast on May 5.——Senior Surgeon Charles E. Banks has been appointed sanitary inspector and medical officer in charge of the United States Safety First special train which is now making an educational tour of the country carrying hundreds of exhibits illustrative of the methods employed by the federal government for saving human life and property, both at sea and on land.——S. A. Surg. Joseph R. Ridlon, Savannah, has been placed temporarily in charge of the work of Dr. D. B. Moss, state bacteriologist of Alabama, Montgomery.

Bequests and Donations.—The following bequests and donations have recently been announced:

Eaglesville (Pa.) Sanatorium for Consumptives, $6,000, the receipts from a benefit performance at a Philadelphia theater, April 27.

Camden (N. J.) Municipal Hospital, an appropriation of $8,000, by councils, for furnishing and equipment.

Philadelphia Home for Incurables, $2,000, by the will of Elizabeth M. Henderson.

Philadelphia Orthopedic Hospital, Presbyterian Hospital and Hospital of the University of Pennsylvania, Philadelphia, each $15,000, for the establishment of free beds in memory of Henry Davis, Mary S. B. Davis and Mary Davis Tenbrook, the Hospital of the University of Pennsylvania to use the income for aiding worthy students, preferably residents of Maine; Philadelphia Home for Incurables, $1,000, by the will of Mary D. Tenbrook.

Louisiana Methodist Orphanage, Ruston, a donation of $5,000, by Dr. Luther Sexton, New Orleans.

Associated Jewish Charities of Chicago, twelve-thirtieths; Alexian Brothers Hospital, Chicago; Jewish Orphan Asylum, Cleveland; German Old Peoples Home, Forest Park; Home for Jewish Friendless and Working Girls, and Chicago Home for the Friendless, each one-thirtieth; Chicago Home for Jewish Orphans, and Chicago-Winfield Tuberculosis Sanatorium, each two-thirtieths; Jewish Training School, Jewish Aid Society for Relief, and Home for Aged Jews, Chicago, each two-thirtieths, of the income of the estate of Hyman Lowy, appraised at $300,000, twenty-one years after the death of the last grandchild now alive.

Presbyterian Hospital, New York, $100,000, by the will of Charles W. Harkness.

Massachusetts Medical Benefit Society, $1,000, and Dr. John W. Pratt, Dedham, $500, by the will of Virginia Carpenter, Dedham.

Temple University, Philadelphia, $2,000, by the will of Adeline Winters.

Hahnemann Hospital, Philadelphia, $12,000, by the will of Isabella T. McQuade.

Wills Eye Hospital, Philadelphia, a contingent bequest of $2,250, by the will of Eloise King.

Wine of Cardui Suit.—Since the publication of the last item concerning this suit (THE JOURNAL, May 13, 1916, p. 1560), following the testimony of Dr. Torald Sollmann, there were called to the stand for the defendant—the Association—Dr. Paul N. Leech, Dr. Lewis E. Warren and Dr. Arthur J. Cramp, who identified specimens and connected up points in the testimony for the defendant. There were then introduced into evidence various exhibits for the defendant. Mr. E. A. Wheatley, advertising counsel for the Chattanooga Medicine Co., was asked concerning the billboard advertisements used by the Chattanooga Medicine Co. Mr. Hough admitted, on behalf of the plaintiff, without conceding that it was an issue in the case, that Wine of Cardui was advertised as extensively as possible. There was then called to the stand Dr. W. S. Leathers. Before this witness' evidence was taken the Court intimated that it was disposed at this point to limit further expert evidence. After some discussion, the defendants rested their case. Mr. Hough stated that at this stage of the trial it was proper to inquire to what extent the defendant has justified; in other words, whether any evidence has been produced which would justify the jury in returning a verdict. The Court stated if the defendants have not justified as to everything then there is something where the jury must find a verdict. Argument was made on this question and the Court finally stated that he would let the case go to the jury.

There were then called as witnesses for the plaintiff up to the time of going to press, Dr. Francis P. Mason, chemical engineer; Dr. George W. Funck, Dr. Francis E. Thornton, Dr. Albert F. von Zelinski and Dr. George C. Amerson, Chicago. There were also read numerous depositions from various women who had used Wine of Cardui.

Medical Museums.—The ninth meeting of the American Section of the International Association of Medical Museums took place at the Army Medical School, Washington, D. C., May 8. Dr. Aldred S. Warthin, Ann Arbor, Mich., was in the chair, and the following officers were elected: president, Dr. Oskar Klotz, Pittsburgh; vice presidents, Drs. W. M. Late Coplin, Philadelphia; H. E. Robertson, Minneapolis, and Daniel S. Lamb, Washington, D. C.; councilors, Dr. Aldred S. Warthin, Ann Arbor, Mich.; W. M. Late Coplin, Philadelphia; Howard T. Karsner, Cleveland; Milton C. Winternitz, Baltimore, and Robert A. Lambert, New York; secretary-treasurer, Dr. Maude E. Abbott, Montreal, and assistant secretaries, Drs. Joseph Kaufmann and William W. Francis, Montreal. An important discussion took place on the standardization of square glass museum jars and the problem of obtaining a source of supply of these under existing war conditions. It was decided to simplify the problem by reducing the large number of miscellaneous sizes, now in use among museums, to from 11 to 16 sizes and a committee was appointed, consisting of Drs. Klotz, Winternitz and Abbott, whose business it should be to approach local glass manufacturers on the one hand and members of the American Section of the Museums Associations on the other and thus attempt to secure a supply of the selected sizes, which it was felt should be obtainable in this country as soon as the large demand which exists becomes definitely formulated. A fine series of exhibits was on view from the Army Medical Museum, Washington University Medical School, McGill Medical Museum, Montreal, and various members of the American Association of Pathologists and Bacteriologists. This exhibiton remained open during the three days of the congress.

FOREIGN

Pathologic Professorship Endowed.—In the will of the late Mr. Stanley Bode, who left an estate valued at about $160,000, after providing for certain legacies, the residue of the property was left in trust for his mother and sister and to the survivor of them and subject thereto, a bequest of $10,500 to Epsom College for one foundation scholarship and the ultimate residue to the University of London for the endowment of professorship in pathology in the Medical School of Charing Cross Hospital. Of the property bequeathed to him by his wife, he gives, in addition to the number of legacies to her relatives, $5,000 each to the London School of Medicine for Women, the New Hospital for Women, and the pathologic department of the New Hospital for Women, and any residue to the New Hospital for Women.

New American Hospital in Panama.—The new buildings of the Colon Hospital have been completed and turned over to the United States medical authorities for Colon Christobal. The patients will be transferred from the old quarters this month and the old wooden structures will be removed. The new hospital will then have an unbroken sea front and full advantage of the prevalent ocean breezes. The buildings are four in number, of reinforced concrete with tile roof, arranged on the pavilion plan, with an administration building in the center; an east wing for wards and a west wing for dispensary and private rooms and a service building in the rear. There are also an emergency ward, laboratories, Roentgen-ray room, dark room and all other modern hospital conveniences. The buildings are thoroughly screened

have ample protecting verandas the entire length of the building and an enclosed sun porch at the end.

Protest Against British Holding up Supplies.—The chairman of the Central Committee of the American Red Cross has forwarded a letter to the secretary of state, dated May 8, in which he submits the facts that since the beginning of the present war the American Red Cross has invited contributions of money and supplies for the wounded and sick of all belligerent powers; that it has shipped to these powers the supplies contributed; that it has had no difficulty in sending such articles to the entente allies, but that since September, 1915, there has been delay in granting permits by Great Britain for shipment by the American Red Cross to the central powers. Since January of this year only one permit has been granted. The Red Cross is now in receipt of a communication from the state department enclosing a dispatch from the British government in which it definitely withdraws its consent for the shipment of such articles by the American Red Cross and this in effect announces its purpose to treat them as contraband of war. As the American Red Cross considers it to be in the interest of the humane conduct of wars that the principles of the Geneva Convention shall obtain, it urges on the state department the propriety and wisdom of directing the matter again to the British government with the hope that it may change the attitude maintained by it, which appears to be based on a misconception of the attitude of the central powers in respect to Article 29 of the Declaration of London. This article provides that articles serving exclusively to aid the sick and wounded shall not be treated as contraband of war.

LONDON LETTER

LONDON, May 1, 1916.

The War

THE HEALTH OF THE BRITISH EXPEDITIONARY FORCE IN FRANCE

As stated in previous letters, the health of the soldiers, thanks to protective precautions, has been remarkably good. Typhoid fever, which caused 8,000 deaths in South Africa, has been almost absent. The greatest precautions are taken against carriers; no soldier who contracts the disease is allowed to mix with others till he has satisfied the bacteriologists that he is free from the bacilli, and even the civilians in the villages in the war zone are examined bacteriologically, and if found to be carriers are removed. This work is done in laboratories which at first were mobile but now are stationary. There are fourteen in which about 2,000 samples are examined weekly.

NERVOUS DISORDERS

Nervous disorders due to the shock and strain of bombardment are conditions which cannot be affected by hygienic precautions. With the modern development of big guns and high explosives, shell shock has become frequent. A committee has been appointed to investigate the subject in cooperation with the leading French neurologists. The cases have shown great divergence from the disorders observed in civil life. When exposed to concussion of a high explosive, a variety of symptoms may be produced. All consciousness of the explosion may be obliterated, or the soldier may simply become dazed, and afterward his conduct may be "curious" and his actions indeterminate. For these conditions the only treatment is rest. After a heavy bombardment a healthy man may break down, and if removed to a place of safety collapse and fall asleep in spite of the noise that is going on. Some men then recover, but others cannot support noise for a long time. They show overreaction to noise. A cab whistle or an exploding tire outside a convalescent home will bring some patients from their beds. In another group a condition of nervous irritability rather than exhaustion is produced. Thus continuous shelling, even though it produces few casualties, has a wearing down effect. In men with a stable nervous system the effect is temporary, but it is not so in those with neurotic tendencies. Hence our neurologists who are familiar with the nervous systems of our men and our enemies predict that the imperturbable British temperament will confer an advantage in the coming struggle.

THE EFFECTS OF THE WAR ON THE MEDICAL PROFESSION

The results achieved by the Central Medical War Committee of the profession in organizing a medical service for the greatly expanded new army are gratifying. We have reached a stage of preparedness, and are ready for any measures the government may consider necessary. Most of the physicians now remaining in civil practice are married men, and many of these have enrolled for service. If a measure of compulsion should prove necessary, the profession will offer no opposition. Indeed, the number of men who can thus be obtained cannot now be considerable.

DEARER DRUGS

In THE JOURNAL, Jan. 29, 1916, p. 368, was a table showing a great increase in the cost of drugs since the outbreak of war. The following more recent list shows how many times dearer the most commonly used drugs are. It contains some new items and also shows a diminution in some cases and an increase in others of the cost:

NUMBER OF TIMES THE PRICES OF DRUGS HAVE INCREASED OVER THE PRICE AT OUTBREAK OF WAR

Drugs	Times	Drugs	Times
Acetanilid	11	Phenol (carbolic acid)	6
Acetphenetidin (phenacetin)	26	Potassium bromid	16
Acetylsalicylic acid	25	Potassium chlorate	7
Antipyrin	12	Potassium permanganate	27
Caffein	3½	Quinin	3
Calomel	2½	Salicylic acid	20
Citric acid	2	Sulphonal	5
Cocain	7½	Tartaric acid	3½
Cod liver oil	11	Thymol	3½
Cream of tartar	2	Veronal	3

The most remarkable advance is in the case of potassium permanganate, which used to be sold at the rate of 40 shillings a hundredweight. Now it is quoted on the wholesale market at 10 shillings a pound, and dealers who used to traffic in ton lots are glad to pick up a few pounds here and there from retail pharmacists.

THE WORK OF BRITISH ARMY SURGEONS FOR FRENCH CIVILIANS

In a previous letter, reference was made to the work done by British Army surgeons among the French civilians in the area occupied by our troops. Deprived by mobilization of their ordinary medical advisers, the French population would in many cases be unable to obtain advice but for British help, which is gladly and freely given and has evoked expressions of gratitude from the French authorities. Moreover, a considerable amount of drugs and dressings has been supplied. This service has been organized in various ways. In some cases individual medical officers are told off for civilian duty in rotation, a month at a time. In other cases it is caused to be generally known that two will be in attendance to receive civilian patients during a specified hour of the day. In not a few instances, when an epidemic of typhoid or other disease has been suspected, very vigorous sanitary work has been prosecuted over a given district, and there is no doubt that more than one epidemic has been successfully averted. Besides ordinary illnesses there are, of course, casualties among civilians as a result of shelling. One class of work rather foreign to their ordinary vocation, which the physicians have had regularly to do in the absence of the usual practitioners, is midwifery. The gratitude for the work done is marked, cases being recorded of fees, after the usual refusal to accept them, being anonymously deposited in officers' billets at night when it has been impossible to trace their origin. No less pleasant, perhaps, is the fact that no official records have been kept of the work done. As one officer, apologizing for not being able to give accurate figures, phrases it, "It seemed so natural to do it that it was hardly thought of." And this has been almost universal. One army, indeed, is able to report that the average number of civilian cases treated has been about 245 a day. Another can testify to 463 major operations performed of which there would necessarily be records, and estimates about 16,000 cases in all. Much good work has also been done in helping the poorer sections of the people. Subscriptions in special cases have been made on the spot, and in other instances money has been raised for local needs by appeals in England. A certain medical officer has been so active in connection with a children's hospital that he is known in the neighborhood as "English Papa."

The Neglect of Science by the Government

At the Royal Institution H. E. Armstrong, the chemist, recently delivered a lecture on "Organic Products Used in Medicine." In referring to the results obtained through the feverish activity of German laboratories in the production of artificial drugs, he said they were based on hydrocarbon originally obtained by our Faraday as a by-product of oil gas. He pointed out that benzene, the foundation stone of

the organic chemical industry, was discovered and defined in that institution ninety years ago. Through Faraday's pioneer work the light hydrocarbons of coal tar were investigated at the College of Chemistry in 1846. Ten years later the first artificial dye was discovered and manufactured, and a perfume was also artificially made near Harrow. The connection between chemical constitution and physiologic action was first brought into prominence in Edinburgh. Abel developed the gun cotton industry into a stable existence in the sixties, and its application in conjunction with nitroglycerin to military purposes resulted from the work of Abel and Dewar. Why, after having done so much, had we allowed ourselves to fall behind? If we were not to get what we wanted from Germany after the war, we must, as the Australian prime minister had said, attack the problem systematically and scientifically. The universities and public schools placed so high a premium on classical studies that ability was attracted away from science. With no regular remunerative outlet for science, few took it up, and workers found little opportunity in industry. The Royal Society had become the preserve of the academic worker; consequently it had been reduced to impotence, and no sufficient use was made of its great resources. Though 999 out of every 1,000 suggestions brought before the Inventions Committee were useless, as Mr. Balfour had stated, distinguished scientific men were wasting their time on such committees, and the country was misled into supposing that it was receiving the help of science. The casual inventor has been considered, but not those who could give efficient assistance. It was not that science was unable to help; it was simply not allowed to. It was, however, useless to complain of government apathy and of public ignorance as to the application of science to industry, when the body scientific itself remained unorganized. Science, he feared, was losing rather than gaining ground in this country. Through being ineffective collectively, science was voiceless in the councils of the nation.

BERLIN LETTER

BERLIN, April 18, 1916.

Personal

Professor Hofmann, director of the physiologic institute at Königsberg, has succeeded to the position held by Professor Schenck in Marburg.

Prof. A. Wolff, director of the dermatologic clinic in Strassburg, died, aged 65 years. In addition to a textbook on skin and venereal diseases, Wolff has written much on the heredity of syphilis and on gonorrhea in women.

The successor to Professor Plehn, recently called to Berlin, is Professor Jürgens, formerly director of the medical division of the New Cologne city hospital.

The Feeding Problem

In order to facilitate the problem of feeding the poor, several of the suburbs of Berlin have provided transportable kitchens. These kitchens, popularly termed "goulash cannons" are driven through the poor parts of the cities and a good noonday meal is furnished at the rate of 35 Pfennige (8 cents) per liter (quart). This meal consists of vegetable soup cooked with potatoes and meat.

The Future of Disabled Soldiers

Every effort is being made to lessen the difficulties confronting the invalid by providing suitable occupation for him and also encouraging him in taking up a homestead, thus insuring permanent citizenship. The government recently proposed to the Reichstag that there be enacted a law which would make it possible to advance a certain sum of money to those injured in the war. This will encourage these persons to buy homes, and from the medical and sanitary points of view much is to be gained thereby for public welfare. It will make it possible to have better homes and to observe proper sanitation and hygiene. The medical profession has repeatedly pointed out that in order to combat tuberculosis, and the mortality of infants and children, better homes must be provided. The loan which the government proposes to make is available to all invalids between the ages of 21 and 55 who propose to use money for a definite and approved purpose. A civil as well as a medical examination will be made. Furthermore, such applicants will not be given any pensions unless their earning capacity has been diminished at least 10 per cent. by their invalidism. The highest loan will be given to invalids who are not more than 21 years of age. Such a loan will be sixteen times greater than the war pension; that is, 2,880 marks ($720). It will diminish with age so that the invalid of 55 will receive the smallest sum, seven and one-half times the war pension. Each applicant will be permitted to capitalize his field allowance and "mutilation" allowance so that a man aged 29 who has lost his right hand may be given a loan of 7,056 marks ($1,764).

Cooperation Between Chemistry and Biology

Emil Fischer, a chemist of Berlin, recently delivered an address on organic synthesis which portrayed a rather hopeful state of affairs for future cooperation between chemistry and biology. His concluding remarks were as follows: "Biology has profited much from the chemical examination of the purins. It is known that the purin of nucleinic acid in man furnishes the material from which uric acid is made. If the amount of uric acid becomes large, or if for other reasons the excretion of uric acid is interfered with, then, because of its very slight solubility, it is deposited in the joints, in the urinary bladder, kidneys, blood vessels, heart muscle, etc., and causes gout, kidney and bladder stones. Such patients are today given a diet containing very little nucleoprotein, and every effort is made to administer substances which will increase the solubility of the uric acid and further its excretion from the body. On the other hand, debilitated patients will be given nucleinic acid. The decomposition products of nucleinic acid—sugar, purin bodies and phosphoric acid—may be produced synthetically. Why not then make nucleinic acid synthetically? This has, in fact, already been done, and a sample is at hand of a synthetic nucleinic acid which is even crystallizable (theophyllinglukosidphosphorsäure). The war has stopped further research in this direction, but the work done thus far shows what can be accomplished by synthesis. Other substances, doubtless, will be produced in a similar manner, and it is to be expected that before many years have elapsed the chapter on synthesis of nucleinic acid will be as extensive as that on carbohydrates, fats and purins. No one will doubt that biology will derive much benefit from these chemical researches because they bear directly on metabolism and similar problems. Chemical synthesis is far and away ahead of Nature in many respects, because it can avail itself of other aids. One needs but to call attention to vegetable dyes, indigo and alizarin, or the agreeable odors of plants. Synthesis is responsible not only for artificial manufacture but also for a wonderful variety of products. Synthesis in its present state of development gives rise to much speculation. If by means of synthesis these vital products may be reproduced, why should not synthesis have a radical chemical influence on the development and growth of the human body? Experimental biology has shown remarkable results in cultivation, crossing and heredity. The Munich zoologist, R. Hertwig, was able to produce male or female at will from frog's eggs. Jaques Loeb experimented with the sea urchin, using salt solutions which enabled him to develop unfertilized eggs. By actual injury or mere handling of eggs, Roux and others were able to produce curious and unusual malformations. But, as compared with the question of synthesis, spoken of above, all of these efforts are really very crude. What will be the result when the chemical building material of the cell can be changed? This opens up a great field of activity for the research worker and investigator. It will necessitate close cooperation between the biologist and the chemist, and when this is obtained and expended in the proper direction, good results may be expected."

Beer Consumption in Munich

The statistical report of the city of Munich for the year 1914 contains some rather interesting information with regard to the consumption of beer in that city. During 1914 there were twenty-three breweries in Munich. They produced 1,130,723 hectoliters (one hectoliter equals 26⅓ U. S. gallons) of which all but about 10,000 hectoliters were used for making lager beer. There were manufactured 2,998,700 hectoliters of beer; 1,463,823 hectoliters were exported and 22,928 were imported, so that about 1,557,805 hectoliters of beer were consumed in Munich. The population of Munich in round numbers is 645,000. Therefore the per capita consumption of beer would be about 242 liters (quarts) per year. Of course, in defense of the inhabitants of Munich it must be said that these figures are not a reflection on them because the many visitors to the city render able assistance in disposing of the beer. Furthermore, the per capita for beer has been diminishing steadily. As stated, it was 242 liters in 1914; in 1913, 295 liters; in 1912, 312; in 1911, 320; in 1900, 381, and in 1890, 487, more than double the per capita for the year 1914.

Association News

THE DETROIT SESSION

Boat Trips to the Convention City

The local Committee on Arrangements calls the attention of the Fellows of the Association to the delights of a boat trip to Detroit. It is suggested that other cities follow the example of Chicago and charter passenger boats for a lake trip to Detroit, retaining the boats in Detroit as floating hotels during the meeting. It has been done on previous occasions in that city, and has helped out hotels in somewhat relieving congestion.

While the hotels of Detroit have ample accommodations for large meetings such as that of the American Medical Association, the advance reservations have poured in so rapidly that in order to insure every one satisfactory accommodations, the local committee recommends that those who enjoy a boat trip shall come to Detroit by boat and occupy their staterooms during the meeting.

Deaths

Thompson Elbridge Potter, M.D., St. Joseph, Mo.; Jefferson Medical College, 1875; aged 66; a Fellow of the American Medical Association; professor of physiology and diseases of the nervous system in Northwestern Medical College, St. Joseph; one of the founders of Central Medical College and professor of surgery and president of the institution; and on the merger of Central and Ensworth Medical Colleges in 1905, he became professor of principles and practice of surgery and secretary of Ensworth Medical College, St. Joseph; surgeon to St. Joseph's and the Ensworth hospitals; from 1882 to 1886 local surgeon of the Hannibal and St. Joseph Railroad at Cameron, Mo., and mayor of that city in 1884-1885; founder in 1880 and for several years editor of the *Western Medical and Surgical Reporter;* died at his home, April 29, from nephritis.

Frederick Townsend, M.D., Sault Ste. Marie, Mich.; New York University, New York City, 1894; aged 47; acting assistant surgeon, U. S. P. H. S.; a Fellow of the American Medical Association and American College of Surgeons; formerly professor of anatomy in the Detroit College of Medicine; assistant surgeon to the Upper Peninsula State Hospital, Newberry, and in charge of the local work of the United States Public Health Service at Sault Ste. Marie and examining surgeon for the immigration department; local surgeon for the Duluth, South Shore and Atlantic, and Minneapolis, St. Paul and Sault Ste. Marie railways, and the Trans-Ste. Marie Traction Company; died at his home, April 26, from pneumonia.

Amos P. Dodge, M.D., Oneida, N. Y.; University of Maryland, Baltimore, 1874; aged 62; a Fellow of the American Medical Association and once vice president of the Fifth District Branch of the Medical Society of the State of New York; a charter member of the New York and New England Association of Railway Surgeons and of the Oneida Medical Club; for four years health officer of Oneida and for thirty years division surgeon of the New York Central Lines and the West Shore system; died at the home of his daughter in Oneida, May 3.

Elbert Wing, M.D., Los Angeles; Northwestern University Medical School, 1882; aged 63; a Fellow of the American Medical Association; for several years professor of nervous diseases and medical jurisprudence in his alma mater, and attending neurologist to St. Luke's and Provident hospitals; who moved to California in 1904 on account of ill health; vice president of the Sewell-Clapp Envelope Company; died at home, May 8, from cerebral hemorrhage.

William Howard McKenzie, M.D., Newark, N. J.; College of Physicians and Surgeons in the City of New York, 1892; aged 48; a member of the Medical Society of New Jersey; physician of Essex County for more than ten years and president of the medical board of St. Barnabas' Hospital, Newark; was seized with a cerebral hemorrhage while attending a meeting of the board and died a few hours later in the institution.

Charles Frederick Osgood, M.D., Ogden, Utah; Rush Medical College, 1896; aged 48; a Fellow of the American Medical Association and a prominent practitioner of Utah; a member of the Board of Medical Examiners of the State of Utah; a specialist on diseases of the ear, nose and throat, was shot and instantly killed in his automobile, May 2, by a man supposed to have been of unsound mind.

Robert B. Turner, M.D., Waco, Texas; Medical College of Ohio, Cincinnati, 1874; aged 65; formerly a member of the State Medical Association of Texas; chairman of the McLennan County Lunacy Board since 1913; was found dead in his office, May 2, from a gunshot wound of the head, believed to have been self-inflicted, with suicidal intent while despondent on account of ill health.

John Davidson Jones, M.D., Cleveland; Western Reserve University, Cleveland, 1866; aged 78; a Fellow of the American Medical Association; for ten years a member of the Board of Education of Newburg, Cleveland, and for ten years thereafter a member of the Cleveland board; died in the Charity Hospital, Cleveland, May 4, four weeks after a surgical operation.

William Henry Sledge, M.D., Mobile, Ala.; University of Mobile, Ala., 1881; aged 60; formerly a Fellow of the American Medical Association; a member of the Medical Association of the State of Alabama and once president of the Mobile County Medical Society; for thirteen years president of the Board of Education of Mobile County; died at his home, April 30.

Francis Besant Bishop, M.D., Washington, D. C.; University of Maryland, Baltimore, 1883; aged 62; a Fellow of the American Medical Association and formerly president of the Medical and Surgical Society of the District of Columbia and of the American Electro-Therapeutic Association; died at his home, April 30, from meningitis following mastoid abscess.

Jesse Edwards Hunt, M.D., Kansas City, Mo.; Western Reserve University, Cleveland, 1902; aged 37; formerly a Fellow of the American Medical Association; a member of the Missouri State Medical Association; professor of pediatrics in the University of Kansas and a member of the staff of Mercy Hospital; died at his home, April 29, from diphtheria.

Burwell Alexander Duncan, M.D., Morehouse, Mo.; Medical College of the State of South Carolina, Charleston, 1857; aged 80; a Fellow of the American Medical Association; an esteemed practitioner of Aberdeen and Columbus, Miss., until 1902 when he located at Morehouse; died at his home, April 14, from cerebral hemorrhage.

John Gibson, M.D., St. Albans, Vt.; University of Vermont, Burlington, 1898; aged 48; a member of the Vermont State Medical Society; formerly adjunct professor of materia medica and therapeutics in his alma mater; a member of the medical staff of St. Albans Hospital; died suddenly at his home, May 3, from heart disease.

George Augustus Quinby, M.D., New York City; New York University, New York City, 1857; aged 84; said to have been the oldest alumnus of his alma mater; surgeon on the staff of the New York Hospital in 1856 and a member of the staff of St. Luke's Hospital from 1865 to 1867; died at his home, May 3.

Adolph G. Beyer, M.D., Milwaukee; Milwaukee Medical College, 1909; aged 45; formerly a Fellow of the American Medical Association; at one time a member of the faculty of the Wisconsin College of Physicians and Surgeons; died in the Emergency Hospital, Milwaukee, April 29, from pleuropneumonia.

Albert S. J. Burchett, M.D., Memphis, Tenn.; Meharry Medical College, Nashville, Tenn., 1884; aged 55; a colored practitioner; was found dead in Wills Park, Memphis, April 29, from a gunshot wound believed to have been self-inflicted with suicidal intent while despondent on account of business affairs.

Alexander H. Hepburn, M.D., Chicago; Northwestern University Medical School, 1899; aged 41; a member of the Illinois State Medical Society and a veteran of the war with Spain in which he served as a member of the First Illinois Cavalry, U. S. V.; died suddenly, May 9, from diphtheria.

William Stanford Stevens, M.D., Boston and St. Albans, Vt.; Harvard Medical School, 1883; aged 56; in 1891 a member of the Massachusetts Legislature and in 1888 and 1889 a member of the Common Council of Boston; died at his home in Boston, April 29, from myocarditis.

Charles Poplin Harvielle, M.D., Salt Lake City; Washington University, St. Louis, 1899; aged 40; a Fellow of the

American Medical Association; assistant county physician of Salt Lake County; who had suffered for several years from disease of the throat; died in Denver, May 2.

George Augustus Fagan, M.D., North Adams, Mass.; McGill University, Montreal, 1898; aged 45; a member of the staff of the North Adams Hospital and chairman of the North Adams Board of Health; died in the Samaritan Hospital, Troy, N. Y., April 1, from Pott's disease.

Albert O. Ward, M.D., Indianapolis; Medical College of Indiana, Indianapolis, 1874; aged 73; for forty-nine years a practitioner of Indianapolis; a Fellow of the American Medical Association and a veteran of the Civil War; died at his home, May 1, from myocarditis.

Edward Mortimer Paterson, M.D., Oakland, Calif.; Harvard Medical School, 1871; aged 71; formerly professor of physiology and histology in the College of Physicians and Surgeons, San Francisco; died at the home of his son in San Jose, Calif., April 24.

Buel Smith Bigelow, M.D., Chicago; University of Vermont, Burlington, 1863; aged 76; died in the Henrotin Memorial Hospital, Chicago, April 24, from cancer of the cecum for the relief of which an operation had been performed a few days before.

Herbert Stanley Monkman, M.D., Vegreville, Alta.; Trinity Medical College, Toronto, 1906; aged 39; at one time a practitioner of Bottineau, N. D.; captain in the Third Canadian Mounted Rifles; was killed in battle "somewhere in Flanders," December 2.

Millard Fillmore Crawford, M.D., Wray, Colo.; College of Physicians and Surgeons, Keokuk, Ia., 1878; aged 60; for several years a practitioner of Yuma, Colo.; for a month before his death a resident of Wray; died May 2, from influenza.

Felix Amabile, M.D., New York City; New York University, New York City, 1884; aged 54; died in his office, May 8, from the effects of hydrocyanic acid, self-administered, it is believed, with suicidal intent while despondent on account of ill health.

William Henry Harrison Warman, M.D., Washington, D. C.; Howard University, Washington, 1880; aged 75; a medical examiner in the United States Pension Office, Washington; died at his home, April 17, from cerebral hemorrhage.

Maurice Feiman, M.D., Canton, Ohio; Cleveland College of Physicians and Surgeons, 1910; aged 27; formerly a Fellow of the American Medical Association; who was taken ill in Switzerland two years ago; died in Silver City, N. M., May 2.

John J. Mugan, M.D., North Battleford, Sask.; formerly of Langdon, N. D.; Manitoba Medical College, Winnipeg, 1906; aged 46; formerly a Fellow of the American Medical Association; died at his home, February 5, from nephritis.

John Erle Kenney, M.D., Chelsea, Mass.; University of Burlington, Vt., 1882; aged 54; formerly a Fellow of the American Medical Association; a member of the Massachusetts Medical Society; died at his home, May 3.

Ernest Clifton Morris, M.D., Hephzibah, Ga.; Medical College of Georgia, Augusta, 1899; aged 36; formerly a Fellow of the American Medical Association; died at the home of his father-in-law near Hephzibah, April 28.

John A. Hunter, M.D., Philadelphia; University of Pennsylvania, Philadelphia, 1866; aged 78; formerly an assistant in his alma mater and visiting physician to Moyamensing Prison; died at his home, April 29.

William H. Yelton, M.D., Butler, Ky.; Cincinnati College of Medicine and Surgery, 1869; aged 72; a member of the Kentucky State Medical Association; died at his home, January 18, from cirrhosis of the liver.

Axel Fridolf Swanson, M.D., Southampton, Mass.; Albany (N. Y.) Medical College, 1913; aged 24; a member of the Massachusetts Medical Society; died at his home, March 19, from pulmonary tuberculosis.

C. J. Renfro, M.D., North Pleasureville, Ky.; Jefferson Medical College, 1867; aged 73; a Confederate veteran; formerly a Fellow of the American Medical Association; died at his home, recently.

George Lane Fenton, M.D., Kingsley, Mich.; Eclectic Medical Institute, Cincinnati, 1893; aged 67; a member of the Michigan State Medical Society; died at his home, April 29, from pneumonia.

Barton M. Fletcher, Middlesboro, Ky. (license, Tennessee, 1889); aged 79; a Confederate veteran; died at his home, April 19, from senile debility.

Caleb M. Emert, M.D., Elizabethton, Tenn.; College of Physicians and Surgeons, Baltimore, 1884; aged 75; a veteran of the Civil War; died at his home, April 25, from cerebral hemorrhage.

Bertram Leslie Longenecker, M.D., North Stonington, Conn.; College of Physicians and Surgeons in the City of New York, 1890; aged 48; died at his home, April 29, from pneumonia.

Franklin T. Fenton, M.D., Detroit; Pulte Medical College, Cincinnati, 1891; aged 51; formerly a member of the Michigan State Medical Society; died at his home, May 7, from pneumonia.

Hugh Francis Quinn, M.D., Bangor, Me.; Medical School of Maine, Brunswick, 1909; aged 36; a member of the Maine Medical Association; died at his home in Bangor, about April 30.

Samuel McGogney, M.D., Castle Shannon, Pa.; Jefferson Medical College, 1879; aged 59; died in the South Side Hospital, Pittsburgh, May 4, a few hours after a surgical operation.

Robert Lee Tays, M.D., Herkimer, Kan.; Northwestern Medical College, St. Joseph, Mo., 1893; aged 66; for several years coroner of Marshall County; died at his home, April 30.

Garland Silvia Saylors, M.D., Floral, Ark.; University of Arkansas, Little Rock, 1914; aged 28; a member of the Arkansas Medical Society; died suddenly at his home, May 4.

Henry H. Miller, M.D., Rossville, Kan.; University of Pennsylvania, Philadelphia, 1872; aged 64; for forty-four years a practitioner of Kansas; died at his home, May 1.

Joseph Oswalt, M.D., Irving, Kan.; Kansas City (Mo.) Hospital College of Medicine, 1888; aged 78; a practitioner for more than forty years; died at his home, April 29.

John M. Mulholland, M.D., Pittston, Pa.; Eclectic Medical Institute, Cincinnati, 1875; aged 65; a member of the City Health Board of Pittston; died at his home, April 25.

John M. Lisle, M.D., Columbus, Ohio; Starling Medical College, Columbus, 1875; aged 68; a veteran of the Civil War; died at his home, May 4, from heart disease.

John Deal, M.D., Riverton, Ill.; Vanderbilt University, Nashville, Tenn., 1878; aged 67; a Fellow of the American Medical Association; died at his home, February 3.

Charles Sinclair Stone, M.D., Boston; Harvard Medical School, 1886; aged 56; a Fellow of the American Medical Association; died at his home, April 22.

George W. Metzgar, West York, Pa.; (license, Pennsylvania, 1881); aged 61; a practitioner since 1877; died at his home, March 31, from pericarditis.

John Aubrey Vaughan, M.D., Brooklyn; Eclectic Medical College of the City of New York, 1891; aged 70; died at his home, January 29, from nephritis.

John G. Nugent, M.D., Chipman, N. B.; Cincinnati College of Medicine and Surgery, 1876; aged 74; died at his home, January 10, from pneumonia.

George Franklin Ritchey, M.D., Mechanicsburg, Pa.; Jefferson Medical College, 1889; aged 50; died at his home, April 23, from heart disease.

Andrew Albert Johnston, M.D., Unity Station, Pa.; University of Pittsburgh, Pa., 1891; aged 61; died in the Columbia (Pa.) Hospital, April 24.

Cyrus W. Shafto, Asbury Park, N. J. (license, New Jersey, 1892); aged 44; died at his home, April 25, from cerebral hemorrhage.

David Duncan, M.D., Chicago; Hahnemann Medical College, 1887; aged 68; died at his home, May 3, from heart disease.

Marriages

WALTER LOUIS MACHEMER, M.D., Buffalo, to Miss Fanny Carter of Canisteo, N. Y., at Bath, N. Y., May 1.

WILLIAM OSCAR BENJAMIN, M.D., Detroit, to Miss Helen M. Foote of Minneapolis, April 22.

WILLIAM THOMAS DEAN, M.D., to Miss Frances M. Claiborne, both of St. Louis, May 1.

FLOYD H. SPENCER, M.D., to Miss Mary Dalgarn, both of St. Joseph, Mo., April 29.

The Propaganda for Reform

IN THIS DEPARTMENT APPEAR REPORTS OF THE COUNCIL ON PHARMACY AND CHEMISTRY AND OF THE ASSOCIATION LABORATORY, TOGETHER WITH OTHER MATTER TENDING TO AID INTELLIGENT PRESCRIBING AND TO OPPOSE MEDICAL FRAUD ON THE PUBLIC AND ON THE PROFESSION

THE WINE OF CARDUI SUIT

(*Continued from page 1575*)

April 20, 1916, Afternoon

TESTIMONY OF DR. JOSEPH BOLIVAR DE LEE

The Court met pursuant to recess. Dr. Joseph Bolivar De Lee was called as a witness for the defendants.

DIRECT EXAMINATION BY MR. T. J. SCOFIELD

Dr. De Lee testified that he graduated from the Northwestern University Medical School of Chicago in 1891, was intern in the Cook County Hospital for a year and a half. For nearly one year, he was engaged in general practice and then did postgraduate work abroad in the universities of Vienna, Berlin, Paris and London. He was attending obstetrician at the Cook County Hospital for several years and has been consulting obstetrician for ten or fifteen years. He is also attending or consulting obstetrician in the Chicago Lying-in Hospital, Mercy Hospital, Provident Hospital and Evanston Hospital, and Silver Cross Hospital in Joliet. He practices obstetrics as a specialty and has held the chair of obstetrics in the Medical School of Northwestern University since 1897.

Q.—Doctor, will you tell the jury approximately, if you can remember, the number of obstetrical cases which you have had charge of, or have been under your direction? *A.*—The word "obstetrical" cases is a little bit too broad, I will specify, if you please.

Q.—Very well. *A.*—The number of actual confinements or deliveries that I have conducted myself with my own hands would be approximately thirty-five hundred—three thousand, five hundred—and in addition to that I have been called in as counsel, or I have attended as instructor or as spectator in four or five thousand other cases, that occurred in the various hospitals with which I am connected, or that occurred in consultation, as I say, where I did not have the direct care of the patient, but, as you may say, "sat in" on the case. Four or five thousand.

In addition to that, the institutions with which I am connected, of which I was the head, would represent between twenty and twenty-five thousand cases, and in these cases, I would have the responsibility in directing the course of practice of that institution, and in that way the pathological cases—the complications—would come to my notice, and thus I would get the experience from the pathological cases.

Dr. De Lee then described to the jury what is meant by pregnancy and labor, and mentioned some of the various complications which might occur. He illustrated with a mannikin and with charts to the jury the normal female pelvis and the changes which the uterus and other organs undergo during pregnancy. He showed the pelvis in a normal woman and the head of a baby and indicated the mechanism of normal labor. He then showed to the jury the many complications which may occur due to various presentations, etc., stating that there are 136 different positions in which the baby can present. He then showed to the jury a contracted pelvis and the impossibility of normal labor when such a contraction occurs.

Dr. De Lee said that he has had no experience with carduus benedictus.

Q.—Have you had any experience with the use of viburnum prunifolium? *A.*—Yes.

Q.—What experience have you had with it? *A.*—Years ago I gave large quantities of extractum viburnum prunifolium for the prevention of miscarriage.

Q.—Well, what was your experience with it, Doctor? *A.*—I found that it was useless and expensive, and discontinued it.

There was then read to Dr. De Lee a hypothetical question similar to that which has been read to other witnesses, and a statement from the Home Treatment Book under the heading, "Disorders of Pregnancy." He stated that in his opinion the hypothetical medicine would not "assist in making childbirth easier by reason of its gentle, building, tonic, strengthening effect on the female organs and sexual parts concerned in the birth of the coming child."

His reason is that it is impossible for such a combination of drugs to correct a malpresentation and relax a rigid cervix. It would not make child birth easier. There was then read to Dr. De Lee a second statement from the "Home Treatment for Women" under the same heading "Disorders of Pregnancy." In reply he stated that the hypothetical medicine would not have a good effect in giving health and life force to the woman.

A.—I would consider it would have a bad effect on the child. It is generally believed that alcohol should not be given during pregnancy because of its effect on the child, that is, given continuously, because of its effect on the child. And this question is just with reference to the child, is it not?

Q.—Yes. Well, both mother and child. Well particularly, with reference to the added health, strength and life force of the mother? *A.*—The life force of the mother—no, I would say that alcohol would be not the best remedy to be given continuously during pregnancy for its effect upon the strength of the mother.

He was then read a third statement from the "Home Treatment for Women" to the effect that "No one need be afraid of taking Wine of Cardui during pregnancy. Its action is gentle and strengthening and it can never do anything but good."

Q.—What is your opinion? *A.*—That that statement is erroneous and misleading. The medicine, the hypothetical medicine which you have given me to consider has both actual and potential qualities for doing harm.

Dr. De Lee then defined for the jury puerperal eclampsia and the general understanding of this condition.

ECLAMPSIA

Q.—Now, Doctor, during pregnancy, and when these kidney conditions to which you have referred, or these cases which may lead to eclampsia are present, how can you determine that fact in advance of labor? *A.*—By careful watching of the patient for symptoms of the poison, and also by taking her blood pressure regularly, and by examining her urine for albumin.

Q.—Now, when you discover a condition of abnormal blood pressure, or blood pressure that is not satisfactory, or albumin in the urine, what do you do? *A.*—We put the patient on a very strict diet, put her in bed, and unload her bowels, and we try and get her emunctories, that is her organs which throw off poisons, very active, and failing to get rid of the poisons in this way, we occasionally interrupt the pregnancy, because it is the pregnancy which is developing these poisons, and since we cannot remove the poisons we have to remove the pregnancy.

Q.—Now, doctor, assuming that Wine of Cardui corresponds to the hypothetical solution which I have described to you, have you an opinion whether or not the use of Wine of Cardui would have any effect in correcting the kidney condition which you have just described, if taken during pregnancy? *A.*—Yes, I have an opinion about that.

Q.—What is that opinion? *A.*—That it would be not alone useless, but harmful.

Q.—In what way would it be harmful? *A.*—In two ways. The kidneys during pregnancy are the most vulnerable portion of the woman's system. Any bad condition that affects the woman during pregnancy is most likely to settle on her kidneys. Alcohol administered continuously during pregnancy has a bad effect on the kidneys. And the kidney is already overworked during pregnancy; it is generally admitted that the kidney is overworking, it is excreting for the baby and for the mother, and an organ that is already overworking should not be given alcohol—that is should not be given additional work in excreting alcohol.

And while that is a real objection, there is another objection which is none the less real, in fact, more active, and that is the covering up of the symptoms and lulling the woman into a sense of security. You give a remedy that may be useful, and tell a woman: "now take this and you will be all right," and she is likely to accept it as a fact and neglect to bring her water to the doctor for examination. "Oh, I am going to be all right; I am taking this medicine." She won't go to have her blood pressure taken. And a contracted pelvis of that class (illustrating with pelvis) may pass unnoticed until labor comes on and the time is gone to do anything.

Or a diabetes, for example, might pass unnoticed. A woman with diabetes during pregnancy. If she were to take this hypothetical medicine, with the alcohol and the bitter stomachic, it would increase her appetite, perhaps, and she would eat more food of an antidiabetic nature — that is not of a diabetic nature — I mean something that should not be taken in diabetes. She will eat more food than she should. Whereas, if she had not taken this medicine she would not have had such an appetite. That is the reason I say that it has both actual and potential bad effects.

The witness then defined and illustrated with the aid of the mannikin extra-uterine pregnancy.

Objection was made to the introduction of the witness' opinion as to the use of Wine of Cardui in extra-uterine

pregnancy, the court stating that the witness had already stated that in his opinion it would not benefit a woman in any kind of a pregnancy.

TREATMENT OF CONTRACTED PELVIS

Q.—Doctor, in cases of contracted pelvis in connection with childbirth, what do you do under such circumstances? *A.*—It is very necessary to discover a contracted pelvis early in pregnancy. We let the woman go on to term, except when there are other conditions which indicate the termination of pregnancy before term, which term means the end of pregnancy, nine months. We let her go to term. Then knowing that she has a contracted pelvis we do not always let her go into labor, but we either do a cesarean section, take the baby out through the belly, or else we so conduct the labor that the woman should not get into a precarious condition before it is too late to do anything to save her and the baby. There are a great many methods. Sometimes we leave the woman go to labor and see if she cannot deliver herself. Then we do a pubiotomy, that is, we cut the bone here. Or occasionally we apply instruments like forceps.

Q.—Now, during your experience have you ever performed that operation? A.—I have performed 85 cesarean sections, and over a thousand forceps operations, and innumerable other operations for this purpose.

Q.—I suppose, doctor, you have written considerably on these different subjects, have you? *A.*—Yes, yes.

CROSS-EXAMINATION BY MR. HOUGH

Dr. De Lee testified that he recommends that a woman should apply to her physician as soon as she knows she is pregnant. This should be done with a view toward nipping in the bud such complications as may affect her life or that of her baby.

A.—The second proposition, as to when the patient should enter the hospital, that is more or less domestic. A woman that lives out of town—and thousands do come every year to Chicago—is requested to live in a hotel near the hospital and bring her urine every two weeks to the hospital, and have her blood pressure taken. Then if she already has any serious trouble she is put in the hospital to await the confinement in the hospital. A case that I am going to do cesarean section on I would like to have in the hospital for three weeks, to avoid the possibility of marital relations, to get the patient into good physical condition for the coming event.

Q.—In this connection, in your book you say you frequently treat the husband. What do you mean by that? *A.*—In what connection was it said?

Q.—Don't you recall that statement in your book? *A.*—Oh, yes; I have treated the husband in many different connections.

Q.—What did you mean when you said that? *A.*—I will have to give you all the conditions. If the husband has gonorrhea I would like to cure him up before the wife gets pregnant. If the husband has syphilis I would like to cure him up before he impregnates his wife.

Q.—You mean treat the husband then before the wife becomes pregnant? *A.*—Of course.

Q.—You don't refer to a treatment of the husband after the wife was pregnant? *A.*—Well, you might stretch it to mean that. As far as treating the husband is concerned for any condition affecting the woman's labor, I would say by the time the child was conceived that he had passed out of the range of treatment. During pregnancy I could imagine certain conditions where I should recommend treatment of the husband.

Q.—I know what you mean by that statement. You mean treat him before pregnancy? *A.*—Yes, as a rule.

Q.—And not treat him after pregnancy? *A.*—I could still imagine a condition where I would treat a husband after pregnancy.

Q.—I am not asking you what you could imagine. I am asking you what you mean by the statement in your book. You mean treating him before pregnancy? *A.*—In that particular connection.

Q.—Yes. *A.*—It is pretty hard for me to answer a question that generalizes on all the subjects or conditions where I would treat a husband—to answer that in one answer. If you will tell me just what you want I will answer it.

Q.—Now when you are not going to perform cesarean section how early do you want the woman in the hospital? *A.*—The majority of women in Chicago wait until the labor pains begin, and then they come to the hospital.

Q.—How soon is that before delivery, as a rule? *A.*—Varies all the way from—well, sometimes they are delivered in the taxicab or on the stairs of the hospital. Again, they may be in the hospital two or three days in labor.

Q.—But that is not what you recommend? *A.*—No, that is not what I recommend. And what I recommend, and what nature does, are two different things.

Q.—I am asking you how early you want them to come to your hospital? *A.*—The minute they know that they are in labor. As soon as they think that the labor has begun, that moment. They should not wait. They should come to the hospital. And if they have been mistaken, why all right, come there, and then they can go home the next night.

Q.—Well, would you like them there three days before? *A.*—If I can have them there then, yes. If I knew exactly when labor was going to occur I would say, "Yes, please be in the hospital three days before labor is due." That would be very nice.

Q.—The practice of obstetrics is on a very low plane, isn't it? *A.*—The practice is still on too low a plane. It ought to be higher, and it is going higher every day.

Q.—You mean by that every woman who is about to have a child should go into a hospital and have a doctor on hand all the time? *A.*—That would be ideal.

Dr. De Lee described his method of examination and treatment of a patient who comes to a physician after the first month of pregnancy. If drugs are given they are given for conditions that are pathologic. Asked concerning disturbances of urination, he stated that the subject would have to be considered separately in each case and that discrimination must be made very careful. Nobody but a doctor could tell just what medicine to give in any single case.

Q.—Do you mean all doctors could do that, or only a few? *A.*—Not all doctors. I wish they could.

Q.—You mean only a few doctors in your class? *A.*—No, a lot of them besides me.

Q.—Do you mean a lot of them? *A.*—Yes, I am happy to say, a lot of them.

Asked to suggest drugs which would permit the flow of urine, he mentioned hot tea, saffron tea, camomile tea and infusion of digitalis. He would avoid tinctures and extracts because of the irritant action of the alcohol. In cases of constipation he would modify the diet, give liquid petrolatum for its lubricant effect and recommend stewed prunes, perhaps with addition of a little senna.

Q.—Did you ever give regulin? *A.*—Regulin—I gave it some years ago. I forget now what it is. I think it is a sort of agar-agar preparation. Chinese preparation—agar-agar—

Q.—No. *A.*—Well, sulphate, phenolphthalein.

Q.—No. *A.*—Then I don't know what it is.

Q.—Do you mean to say you gave it and didn't know what it was? *A.*—No, my brother asked me about it, and I confess I don't know what Regulin is. I don't believe I gave it. But as a rule I stay away from cathartics. Then if I have to give a cathartic I have a very favorite combination. It contains nux vomica, cascara, rhamnus purshiana and rhubarb. It works very nicely in combination. It is a sort of a synergetic affair.

Q.—Did you say synergetic? You mean synergistic, don't you. *A.*—Well, you can say synergetic.

Q.—It is not a question of etymology. *A.*—I say synergetic. If you want to say synergistic you may do so.

Q.—Do you mean to say that they mean the same thing? *A.*—I will not haggle with you on a question of etymology.

Q.—The etymology is not involved. I am simply asking you if you mean synergistic. *A.*—I won't argue that with you. Have it synergistic or synergetic.

Q.—Go ahead. *A.*—They act synergistically or synergetically; they act together, one helping the other.

Q.—Any other medicines that you give? *A.*—I don't give it as a continuous cathartic.

Q.—Any other medicines you give for that condition? *A.*—Do you mean of constipation?

Q.—Yes. *A.*—I give milk and molasses enemas. Enemas of milk and molasses, and water.

Q.—That is all you can recollect? *A.*—That is all I can recollect now.

Q.—What did you give before you knew anything about Russian oil? You haven't known about it always? *A.*—No, that is a rather recent application. I gave the tonic laxative which I have mentioned to you, and I gave agar-agar, which I thought was regulin when I mentioned it, because it is given under a great many different trade names. And Pluto water. Epsom salts.

Q.—You are not opposed then to proprietary or secret remedies, are you? *A.*—Well, if I know what is in it. I don't oppose them on general principles. If they do the work.

Q.—It doesn't make much difference what is in them, if they do the work? *A.*—Oh, yes; it makes a difference.

Q.—If it does the work? *A.*—Oh, yes; it makes a difference.

Q.—If it does the work? *A.*—I am careful.

Q.—Even if it does the work? *A.*—Oh, yes, it makes a difference. It does not always follow there, because sometimes they may do the work and they do harm at the same time.

Q.—You mean because of another ingredient? A.—Because of another ingredient. That is the objection to prescribing things that have several ingredients. You get the effect of the one that you want, but you have to take the effect of other things that you do not want. Now if the disease that you are prescribing the remedy for is so bad that you are willing to take the effects of the other remedies in order to get the good effects of the one, that is the doctor's business to decide, and he can decide it as a rule.

Q.—Now are there any other conditions than constipation and bladder trouble which would require medical treatment, that it medicines given through the mouth, during pregnancy? *A.*—Yes.

Q.—What other conditions? *A.*—One of the most common conditions which I have met is frequent miscarriage. Women have a history of frequent miscarriage for apparently no reason, and if I can find syphilis, as a cause of that, why, of course, I give antisyphilitic medicines. If it is malaria—sometimes they have that.

Q.—You do not give that in the mouth? *A.*—What?

Q.—Antisyphilitic medicines? *A.*—By mouth.

Q.—Do you? *A.*—Why, of course.

Q.—You do not believe in salvarsan? *A.*—Yes, yes.

Q.—You do not give salvarsan by mouth, do you? *A.*—No, you give that intravenously.

Q.—I thought nobody gave anything but that nowadays. *A.*—I will not testify as an expert for the genito-urinary specialist; but, if I had syphilis, I believe, from what I know of the remedies, I would rather take the old-fashioned treatment by mouth and the inunctions, instead of salvarsan; but, as I say, I do not testify to that as an expert.

Q.—What is the next then? *A.*—If a woman has malaria, I try and treat the malaria as a cause of these frequent abortions. If she has tuberculosis, I try and treat the condition that it presents; in brief, in any pathological condition that requires the use of medicines by mouth, I do not hesitate to give them, providing the medicines do not interrupt the pregnancy—they don't have a bad effect on the pregnancy.

Q.—But you never give any medicines which contain any alcohol because the alcohol is dangerous during pregnancy? *A.*—That is too broad. Occasionally, you have to give a medicine containing a small amount of alcohol.

Q.—What would you call a small amount of alcohol? *A.*—Ten or fifteen drops.

Q.—Well, what per cent? *A.*—Wouldn't the per cent. depend upon the amount of the remedy? Ten or fifteen drops of alcohol, two or three times a day, a couple of weeks or a month, will not hurt the patient in my opinion. More might. But, as I say, I avoid those remedies.

Q.—What is that? *A.*—I avoid, as a matter of practice, the use of alcohol in pregnant women.

Dr. De Lee was then cross-examined as to the percentage of alcohol in the infusion of digitalis. He said that he prepares an infusion by pouring some boiling water over an ounce of leaves.

Q.—You said the infusion of digitalis does not contain alcohol; you are mistaken about that, aren't you? *A.*—Very well, I would be glad to admit I was mistaken. I know I made the infusion, the last infusion last time I used it.

Q.—Well, but the Pharmacopeia prescribes how it should be made, doesn't it? *A.*—Very good.

Q.—And it requires 100 c.c. of alcohol, doesn't it? *A.*—I do not know. I never read the Pharmacopeia.

Q.—You mean you practice without reference to the pharmacopeia? *A.*—Yes.

Q.—Or the National Formulary? *A.*—Yes.

Q.—Or any medical book that anybody ever wrote? *A.*—Oh, that is different.

Q.—What medical books do you rely on, or do you have confidence?

After objection which was overruled, the witness answered:

Mr. Hough: *Q.*—What do you mean by that "that is different"? *A.*—I mean this, that when I read a medical book, I take the man who is writing it, and see what I consider his value as an authority is; and if he says something that I don't agree with, I don't accept it in practice. He may say a whole lot of things in that book which I know, from my own experience, are fallacious; so, when you say, don't I practice according to medical books, I say right off, "that is different."

Q.—What use do you make of medical books? *A.*—To add to my general knowledge.

Q.—You mean merely to find out who agrees with you and who disagrees? *A.*—No, no, that is different. I want to know what people are doing. And when I find something in a medical book that appeals to me as being reasonable, I will use it in my practice. If I find it unreasonable, I discard it.

The witness was asked which medical books contain anything which he regards as reasonable. Objection was made to the question and sustained. He was then asked whether he did not start with some list of books when he first began to study to which he answered that he did. Objection was made to the question but was overruled.

Mr. Hough: *Q.*—Then you followed in your original practice what the medical books said? *A.*—Yes; every doctor does that.

Q.—Then you formed your opinion later from your own experience? *A.*—Exactly.

Q.—Which might have the effect of modifying what some medical books said? *A.*—As a rule.

Q.—But, has your experience taught you to disbelieve the majority of things that are in medical books? *A.*—I would hardly know how to answer that. That is too sweeping a generalization.

DEATHS IN LABOR

Q.—Well, I will not insist upon your answering it. When you say in your book that "20,000 women die in the United States every year from direct or indirect effects of labor," what do you mean? *A.*—These statistics furnished us by the United States Census Bureau of last year—that is, the last time they came out—enumerated the deaths of 10,010, I think that is about it—it is around ten thousand deaths of women in childbirth. Those are reported deaths. We know they died, because the death certificates came in. That represents the returns from the registration area of the United States, of 60 odd per cent. — I am not sure of the exact figures; if I had known I was going to be asked this question I would have brought them down.

Now, then, if 60 per cent. area of the United States is registered and the women dying in that area are reported to the Washington Census Bureau, the other 40 per cent. of deaths not being reported, it would be pretty safe in saying that if ten thousand women die in the registration area, another four thousand every year will die in the nonregistration area, which would give us 14,000 women that die in the nonregistration area — that is, I mean in the total United States. That is general, and I will not insist on the accuracy of all those things, but it is general. Now, every year, gentlemen, a certain number of women die during childbirth and after, where their deaths are not reported to the authorities, because they die under conditions that might be suspicious; child bed fever, for example, or somebody made a mistake; and they are reported as dying from typhomalarial fever, or some other condition. A certain proportion of those are so reported.

Then again a woman will have a contracted pelvis, and some doctor will use forceps, where he should have done cesarean section, and tore that poor woman all to pieces. She has to go back again in a year or so and be resaired, those stitches put in, and the uterus that has been misplaced, put in order by an operation, and she dies as a result of that operation. Now, that operation, while it was the immediate cause of death, dates back and should be quoted in this six thousand. And my judgment is that another six thousand would be a very small estimate to put upon those women that die from the immediate and remote effects of childbirth.

Q.—Were they all cases where the doctors were in charge? *A.*—No; doctors and midwives.

Q.—Doctors and midwives? *A.*—Yes.

Q.—Those are the reportable cases? *A.*—Well, they were reported cases, as they came within the knowledge of the Health Department.

Q.—What did you mean about the number of women who died in childbirth, but who were operated on under another diagnosis? *A.*—I just told you that, that they—

Q.—You mean when it was a mistake in diagnosis? *A.*—Yes, through a mistake—yes, a mistake in diagnosing.

Q.—You don't include the abortions in that, do you? *A.*—I would have to look at the statistics to see if abortions were included in that. The American statistics are not very useful to draw positive conclusions from.

The witness was then asked concerning the various types of anemia and he said that he usually gives an alterative tonic, for example, a mixture of iron, arsenic, mercury and iodin. He was asked concerning the preparation of digitalis and he stated he has prescribed an infusion made up according to the pharmacopeial preparation.

There was read to the witness a prescription for atonic constipation attended with flatulence which he is said to have prescribed consisting of fluidextract of cascara sagrada, 30 c.c.; tinctura rhei aromatica, 30 c.c.; tinctura nucis vomicae, 20 c.c.; elixir taraxaci comp., N. F., enough to make 120 c.c.

The witness was asked how much alcohol is contained in these preparations. He answered that the patient gets 30 drops of the medicine three times a day. He was questioned specifically concerning the percentage of alcohol in each ingredient. He finally stated that the total amount of alcohol represented in a dose would be not more than 15 drops. The patient is instructed not to take that continuously. She is given only enough to last ten days and is instructed to discontinue it as soon as possible.

Council for the plaintiffs argued that there were 24½ drops, finally agreeing that he made a mistake, the witness stating:

The Witness:—I granted you fifteen drops, and, as a matter of fact, it is 7½ drops of pure alcohol.

Mr. Hough: *Q.*—Now, are there any other prescriptions? Does that remind you of any other prescriptions containing alcohol? *A.*—I prescribe very little drugs. I am rather opposed to indiscriminate drugging, and I am therefore very discriminating in using them. I use alcohol in a nipple wash compound, spirits of lavender.

Q.—I don't mean outside. I am talking about in the mouth. *A.*—Yes, yes. Oh, yes; I use ergot, fluidextract of ergot for postpartum hemorrhage. Is that what you wanted me to answer?

Q.—Yes, that is one. *A.*—And I also use ergot for the abortion—

Q.—How much ergot? *A.*—The patient gets ten to fifteen drops three times a day.

Q.—Of alcohol? *A.*—No, fluidextract of ergot. If she took more than that, she would get ergot poisoning.

Q.—How much alcohol does that contain? *A.*—I think ergot contains about 50 per cent. of alcohol, and so she gets 5 to 7 drops of alcohol.

Q.—Doctor, it has been testified to here that pregnancy is a normal function. What is your opinion about that? *A.*—You have opened up a very interesting subject.

Mr. Hough:—I thought I would.

Mr. Walker:—And you did not have to go to the figure.

Mr. Hough: *Q.*—Your opinion is that it is pathological, is it not? *A.*—With certain modifications, pregnancy is a natural function.

Q.—Pregnancy and puberty are both natural in a state of nature? A.—Yes.

Q.—But in our state of civilization they are both really physiological—

Mr. Walker:—Pathological.

Mr. Hough:—Pathological, I should say.

The Witness:—They are very often pathological; so often that they require medical attention from start to finish, if it is possible to give the patient the medical attention.

Q.—Now you have been testifying, Doctor, with reference to ideal conditions, haven't you? A.—We always strive for ideals.

Q.—What do you suppose the poor woman who lives back in the country is going to do if she cannot come to your sanitarium? A.—Well, most of the women don't come to my sanitarium or any sanitarium—

Q.—I mean any sanitarium. A.—At least I have no sanitarium. And what a woman in the country should do would be, as soon as pregnancy has declared itself, to go to the nearest reputable physician and let him give her whatever care it is possible under the circumstances then and there existing; warn her against the complications which are likely to arise; insist that her husband when he comes to town, as he probably does frequently, bring to him a bottle of her water and at least examine the urine. These few things any woman can get, no matter where she is; and pretty nearly every doctor, cross-roads doctor, knows enough to manage those cases.

The witness then testified again as to the number of deaths occurring from childbirth, and as to the symptoms of extra-uterine pregnancy.

The average physician can tell on examination whether or not the woman is going to have a difficult time in labor. He stated that the head of the fetus might be compressed to a thickness of three sheets of paper.

Q.—Doctor, when you said that this hypothetical medicine, taken during pregnancy, would have no effect whatever, except the effect of the alcohol, did you mean in any condition attending pregnancy? A.—Let us separate that into two parts.

Q.—First, did you make that statement? A.—Not exactly.

Q.—How did you state that? A.—I do not remember exactly how I stated it. I can answer the question, however to your satisfaction, if you will let me separate it into two parts.

If a woman needed a little appetizer, and I gave her some bitter medicine, whether it is viburnum or anything else, it might stimulate her appetite a little. If the woman needed alcohol in the medicine, and I gave her alcohol—I would give her alcohol if she needed it by the prescription, and then it would have the effect of the alcohol.

Q.—Well, suppose the medicine was hepatic? A.—An hepatic stimulant, is that what you mean?

Q.—Yes. A.—How much would I have to give her in order to get the hepatic stimulant?

Q.—No, suppose it was hepatic in the doses in which it is given, an hepatic stimulant in the doses in which it is given. A.—In order to give that dose, I would have to give of that particular hypothetical medicine, so much that the alcohol in it would be prohibitive.

Q.—Well, you lose sight of the hypothesis you are supposed to assume. You know nothing about carduus benedictus. A.—Practically.

Q.—You have never used it? A.—Practically none.

Q.—Well, have you ever used it? A.—Yes, I prescribed carduus benedictus once.

Q.—When was that? A.—About two weeks ago. Interested in what was going on, I had a case which I thought might be useful.

Q.—Where did you get the carduus benedictus? A.—What?

Q.—Where did you get the carduus benedictus? A.—If you will allow me, I will tell you. So I prescribed it, and before the patient—it was a case of hemorrhage, threatened abortion, and I told the woman to go home and go to bed, and rest in bed, and I gave her this prescription, and her husband went to fourteen different drug stores, and could not get it. In the meantime the patient got well. So that when I say that I have practically no experience, that is what I mean.

Q.—Then you have no experience at all? A.—Well, that is for you to decide. You asked me, and I am telling you.

Mr. Walker:—Why sure, she was cured by the mere prescription. He has got the experience. All you had to do was to suggest it, and the woman got well.

The Witness:—Well, the woman did not know it.

THE COURT:—Why, he only told her husband.

The Witness:—Her husband did not know what was in it.

Mr. Walker:—She got cured by telepathy.

Mr. Hough: Q.—Do you mean the woman herself, did not come to you? A.—What do you mean?

Q.—This patient, she herself, did not come to you? A.—Oh, yes; sure.

Q.—You gave the prescription to her, didn't you? A.—No.

Q.—You mean her husband came with her? A.—Now, wait a minute. I want to recall the incident. I don't remember whether her husband was there or not, but anyway she was an ignorant Russian, Jewish woman, and I doubt if she could read and I doubt if her husband ever looked at the prescription, and I am telling you I gave her the prescription, and she went home and went to bed, and did not get the medicine until late the next night. They had to send to the wholesale druggist, I guess, to get it, and by that time the hemorrhage had stopped.

Q.—Did you call on her the next day? A.—No, the husband telephoned me at the end of the week. I told him to call me up and let me know the effect of that medicine, and he told me what I told you. So I said, "Wait another week and bring your wife down." He went away and so I examined her and she was all right. That is all the experience I have had.

Q.—You did not see the medicine that she got, did you? A.—No. Well, that she did not get.

The witness was asked concerning the dosage which he prescribed. He stated that he could not give sufficient of the hypothetical medicine mentioned to get the effect of either of the principles mentioned without giving more alcohol than he would wish to prescribe.

He was asked whether he assumed that volatile oil in the hypothetical medicine had no effect. He stated that volatile oils in the combination were so small in quantity as to be negligible. He stated that volatile oils as usually given are inert. He was asked what volatile oils that he could remember that had any effect. He stated that even supposing that the diuretic and diaphoretic principles are present in sufficient amount to give that action he still considered this mixture would not be safe to give in pregnancy not only because of the amount of alcohol but also because diuretic or diaphoretic drugs must not be given without the physician knowing what he is giving them for.

The further hearing of the case was adjourned until April 21, 1916, 10:30 a. m.

April 21, 1916, Morning

TESTIMONY OF DR. JOSEPH B. DE LEE (*continued*)

The Court met pursuant to adjournment. Dr. Joseph B. De Lee resumed the stand for the defendants.

CROSS-EXAMINATION BY MR. HOUGH

Dr. De Lee was asked as to his knowledge of alcohol. He stated that it was general. He was asked:

Q.—Are you familiar with the statement of Dr. J. Clarence Webster on the subject in his book on "Diseases of Women"? A.—I don't know what he says about it.

Q.—Well, is this statement a fact: "Brandy or whiskey is valuable where there is much exhaustion. As much as 10 or 12 ounces, or even more, may be administered in 24 hours, chiefly for the food value, though the stimulant action is also important." Is that a fact?

Mr. T. J. Scofield:—I object to that question, if the Court please.

THE COURT:—What is the objection?

Mr. T. J. Scofield:—I don't see how it is cross-examination in any way, or how it is material.

THE COURT:—Well, this is not what Dr. Webster said, I mean so far as the question is concerned. The witness said he did not know what Dr. Webster said in his book. Now, Mr. Hough has a right to ask him whether alcohol in these doses, under these conditions he regards as proper.

Mr. Hough: Q.—Is that a true statement, in your opinion?

THE COURT:—Do you agree with that statement?

The Witness:—Since that is an important statement, and I want to know the details, might I ask you to read it again?

Mr. Hough: Q.—Well, the statement that is important, is the fact that it may be administered in as large quantities as 10 or 12 ounces in each 24 hours for its food value, as well as for its stimulating value. A.—Under what subject, may I ask, is that recommendation given?

Q.—Now, would a woman during pregnancy be able to oxidize or assimilate freely less alcohol than she would in any other menstrual disturbance? A.—You have assumed that pregnancy is a menstrual disturbance. That is an erroneous assumption.

Q.—Well, leave out the word "other." Any menstrual disturbance? A.—Offhand I would say that the woman's power of assimilating and getting rid of toxic (poisonous) matter—toxic means poisonous—I would say that a woman's power of assimilating and getting rid of toxic products during pregnancy would be diminished on account of the weakness of the kidneys, the vulnerability of the kidneys to toxic influence.

Mr. Hough:—I ask that that answer be stricken out as not responsive.

THE COURT:—It is not directly responsive.

Mr. Hough:—And it has no bearing on what I asked, which was whether a woman in pregnancy would assimilate more or less alcohol than in menstrual disturbances without pregnancy? A.—Assimilation—I would like to explain to the jury—consists in the using up of a medicine and its removal from the body. That is part of the function of assimilation. And I have not made any pharmacological experiments to determine how much alcohol a woman can assimilate and get rid of during pregnancy as compared with the same woman during the menstrual periods. I doubt if such pharmacological experiments have been made. So that I can only generalize in that way and use my general information regarding poisons, and we do know that all forms of poison are less easily gotten rid of during pregnancy. That is generally understood.

V. 19

Objection was made to the witness stating whether the statement of Dr. Webster was true or untrue.

Mr. Hough: Q.—Will you state then, whether in your opinion a woman suffering from any female disease can assimilate so much as ten or twelve ounces of brandy or whisky a day? A.—That is not a statement for an expert on obstetrics to decide. That is a pharmacological—

Q.—Have you no opinion on the subject? A.—What?

Q.—Have you no opinion on the subject? A.—The general impression is that a woman can assimilate two ounces of alcohol, two or three ounces of alcohol in a day. Whether or not it is advisable to give that amount of alcohol depends on the case. The olden time treatment for childbed fevers was alcohol. They would give as much as a quart of whisky a day, and it was said that women could absorb and assimilate as a food a quart of alcohol in a day — or whisky, not alcohol. Now my opinion is that that amount of alcohol—and I base my opinion on my own experience as I have tried it—that that amount of alcohol is harmful and not good.

Q.—What is the maximum amount, in your opinion, which is not harmful? A.—Well, I have given in the form of an eggnog to stimulate the appetite, or to produce a little change in the diet, or to encourage the condition, I have given as high as an ounce, possibly two ounces, in a day. But if the woman has a tendency to—

Q.—Before you go on, will you just explain how many drops there are in an ounce, or two ounces? A.—Oh, I should say in an eggnog a woman gets a teaspoonful of whisky, sometimes two teaspoonsful of whiskey, to brace her up over a depressed period.

The witness was then asked if he relied on any statements made by THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION in forming his opinion. He answered that he relied on all the literature he has read; things that he has heard in court and from various people. He would not assume anything regarding a statement, he would wish to know who made it and would study each individual experiment and see whether the experiment suited him.

Dr. De Lee was asked if he would give the name of the woman for whom he prescribed carduus benedictus. He stated that he preferred not to do so, and would not care to give it privately to the counsel for the plaintiff. The Court stated that where the case was brought out on cross-examination he doubted much if the Court should be required to direct the witness to furnish the name. In the case in question Dr. De Lee examined the patient in his office, for which the patient paid $2. He was questioned specifically regarding the details of the examination.

Q.—When she came back did she tell you what she had paid for the prescription? A.—No, I didn't ask her.

Q.—But you didn't expect it to do any good when you gave it to her? A.—That is one of the reasons I prefer not to give you her name.

Q.—Why? A.—I rather hesitate to let her know that I gave her a medicine that I did not think was going to do her any good.

Q.—Well, but you charged her for it too, didn't you? A.—No, I beg your pardon.

Q.—Didn't you charge her $2? A.—I charged her $2. I gave her a thorough examination. I advised her to go to bed—a remedy which I believed was going to cure her.

Q.—Aren't you going to give her back the price of the prescription?

Mr. T. J. Scofield:—Oh, I object to that if the Court please.

The Witness: A.—Did I give her back the price of it?

Mr. Hough: Q.—You will, won't you? A.—If she should ask me I would gladly give her back. But I gave her more than $2 worth of service, I assure you. I didn't charge her for the telephone calls. Let us call that square on the prescription.

Q.—You mean you didn't charge her for the prescription then, you charged her for talking to her? A.—Oh, yes, I get a lot of money for that.

Q.—When the husband telephoned to you what language did he use? A.—I really don't know. It may have been English or German. I understand both equally well.

Q.—Did I ask you if you were continuing to attend her? A.—Yes, she is on my book. I haven't heard from her. She may have had her abortion and called in a local doctor. That often happens. Or she may be well and may have her abortion later, and I may be called. That class of patients are very uncertain. They leave one doctor very often for another.

Dr. De Lee was asked to define eclampsia and state its causes. He stated that the cause is said to be a poison or toxin. The exact chemical nature of the poison is not understood.

Q.—Now under the head of "eclampsia" on page 362 of your book is this statement:

"Eclampsia and allied conditions. It is impossible to classify these diseases because the causes are unknown."

That is a correct statement, is it? A.—Oh, yes, in a general way. I think it is impossible to classify disease.

Q.—At least it was a correct statement when you wrote the book? A.—Yes, it must have been or I probably would not have put it in.

Q.—Now since hearing Dr. Kay testify on the stand yesterday you know what the causes are, don't you?

Mr. T. J. Scofield:—I object to that, if the Court please.

THE COURT:—Objection sustained.

Mr. T. J. Scofield:—He is testifying from his own experience.

Mr. Hough: Q.—You heard Dr. Kay testify? A.—I heard Dr. Kay. Very good testimony.

Q.—You heard the testimony? A.—Yes; pretty good testimony.

Q.—You heard him testify as to the causes of eclampsia, didn't you? A.—He said something about constipation causing eclampsia. I thought I mentioned that too, as one of the causes.

The witness was then asked whether extractives from viburnum prunifolium could be of any benefit in eclampsia. He stated that they could be of the slightest imaginable benefit. He stated that he did not believe that 48 drops of alcohol three times a day would produce eclampsia, but he recited a case in which larger doses of alcohol did produce eclampsia. He stated that there is authority for believing that alcohol should not be taken during pregnancy. He was asked whether or not there is more eclampsia in Europe He stated he did not know that there was. He stated that there was perhaps one case of eclampsia in 600 cases, but that statistics vary. In Baltimore, for example, there is more eclampsia.

The witness was then asked as to his knowledge of the treatment prescribed in the Home Treatment Book. He stated that he knew in a general way that the knee-chest position is recommended and keeping the bowels open. He is not so expert on the Home Treatment Book as he is on his own book. He understood from the Home Treatment Book that without taking Wine of Cardui a treatment could not do very much good.

The witness was then asked as to his treatment of threatened abortion. He defined habit-forming drugs and as the greatest habit-forming drug he mentioned alcohol. He was then read extracts from the Home Treatment Book prescribing the diet suitable for the first months of pregnancy and stated that it is a very liberal dietary, but certain pregnant women ought not to be put on that diet.

THE MIDWIFE

Q.—Doctor, is a midwife an obstetrician? A.—Is a midwife an obstetrician? In the olden times before we had obstetricians, the midwives did the work and they got various names and the first was "The midwife," which means a wife that stands midway between the husband and the real wife. She was a mid wife. In the olden times, the husbands took care of the babies. They were delivered sitting on the husband's lap. Then came the midwife, and they sat on her lap, and in the 16th and 17th century the French midwives were called *sage femme*, meaning wise woman. They were also called *accoucheuse*, which means to put a woman in bed.

When the men, in the beginning of the 16th or 17th century, began to dabble in this particular branch (they had before, but not to any particular extent) they chose the name "accoucheur," which means a man that puts a woman to bed. In England they were called "men midwives," but the men did not like that, so they decided they ought to be called something else, and they selected the word "obstetrician" which comes from the Latin word "obstetrix," to protect or assist and the Latin word "status," to stand as a protection. And I might say that that meaning of the word "obstetrician" is not sufficiently understood and practiced. The obstetrician's business is to protect the patient from dangers threatening her and the baby.

A great many men think that it is their business to help some woman out of trouble, and of course it is to the extent of protecting them from trouble, but they give medicines and things which are not necessary. So you see the origin of the word "obstetrician."

Now, whether a midwife should be entitled to the term "obstetrician" would depend on how you take my description. Her antiquity would certainly entitle her to a great deal of honor, but her actual capacity nowadays would not entitle her to any high degree of honor.

Q.—You mean unless they have had some education along the lines of that subject? A.—Oh, no. The usual obstetrician, or the usual midwife of today, is a very ignorant, unconscientious and really impossible person, the usual one.

Q.—They graduate then, don't they? A.—They do in Europe, and they have some schools for midwives, but the class of women who undertake the study is not of a high grade and they forget very rapidly.

Q.—They graduate then in America? A.—There is only one midwife's school in America of any standing whatever, and that is the Bellevue Hospital in New York.

He was then asked some general questions as to the status of obstetrics in this country today.

TESTIMONY OF DR. G. FRANK LYDSTON

Dr. G. Frank Lydston was called as witness for the defendants.

DIRECT EXAMINATION BY MR. T. J. SCOFIELD

Dr. G. Frank Lydston has been practicing medicine for 37 years. He is a graduate of Bellevue Hospital, New York. He served at the State Hospital in New York, on Blackwell's Island; in the penitentiary hospital, and had for six months charge of the maternity service at Blackwell's Island. He also served for a time as resident surgeon at the State Immigration Hospital, Ward's Island, New York. For 30 years he was connected with the College of Physicians and Surgeons, of Chicago, as a professor in the Department of Diseases of the Genito-Urinary Organs. He has seen perhaps from thirty thousand to fifty thousand cases in his practice and has written various articles on his subject.

Dr. Lydston defined inflammation and their causes and named some of the various bacteria which produce inflammations. He mentioned some of the most common organisms which he finds in his practice: gonococcus, colon bacillus and the spirochete. He was asked to describe gonorrhea in the female. The counsel for the plaintiffs admitted there would be no dispute on this question so that the answer was passed. He was then asked to describe the syphilitic infection in the female, which was described extensively. He described syphilis of the neck of the womb and defined leukorrhea as a symptom of a disease. He has not had any experience with cnicus benedictus or viburnum prunifolium.

The witness was then asked a hypothetical question similar to those asked of other witness and whether a hypothetical medicine such as had been described would cure inflammations of the female genital organs. He stated that it was his opinion that it would not.

Q.—Why not, Doctor? *A.*—Simply because, as you have read the hypothetical question involving this particular drug or preparation, you have shown nothing that would have any effect upon the cause of gonorrhea.

Q.—The cause of gonorrhea being what, Doctor? *A.*—The cause of gonorrhea being a micro-organism that would not be reached by this remedy taken internally, even though the remedy had any germicidal properties, which, in my opinion, it has not.

Q.—Now, Doctor, in reference to gonorrhea in women, I will ask you this question, whether this hypothetical medicinal solution, which I will ask you to assume corresponds to Wine of Cardui, will act upon the cause of the disease and is, therefore, not a mere palliative, but a scientific and specific remedy, with a curative effect upon the seat of the trouble?

Mr. Hough:—What are you reading from, Judge?

Mr. T. J. Scofield:—From the Cardui Home Treatment, page, I think, 6.

Q.—Have you an opinion, Doctor, on that subject? *A.*—I have.

Q.—What is that opinion? *A.*—That it will not.

Q.—Doctor, what would be the effect, if any, of the alcohol content of such a medicine upon the gonorrheal condition—upon the condition of gonorrhea? *A.*—That would depend largely upon what complications existed; and it would depend also upon the amount that was given. You have stated how much there was in the single dose, but you have said nothing about how frequently it is given.

Q.—Yes. The doses being repeated from three to four times every day. *A.*—In my opinion, the alcohol content would be injurious.

Q.—In what way, Doctor, and in what complications? That is a double question, perhaps. *A.*—Well, take for example the infective inflammation resulting from gonorrhea of the uterus. It would tend to increase congestion, tend to increase nervous excitability and sensibility, and in that way would lessen the resistance of the tissues to the inroads of the germ. Anything which tends to produce congestion in the presence of infectious micro-organisms almost invariably tends to increase the virulency of the infection, make it worse.

The witness was then asked particularly concerning the effects of the hypothetical medicine on syphilitic infection. Objection was made to the question, and, after argument, he was asked whether the hypothetical medicine would have effect on any inflammation of the womb. He stated that in his opinion it would not have a beneficial effect.

Q.—Would it make any difference in answering your question—in your answer, Doctor, whether the inflammation was produced from syphilitic causes or other causes? *A.*—It would make a difference in this respect, that the use of that particular remedy, this hypothetical solution, would be even more illogical in the case of a syphilitic inflammation or ulcer of the neck of the womb, than it would be in other conditions—conditions from other causes—and it would be more likely to be injurious.

There was then read to the witness a section from the Ladies' Birthday Almanac for 1913, concerning pain in the small of the back, and the witness was asked to state two or three conditions which come in the line of his special work which might cause such a pain.

PAIN IN THE BACK

A.—Pain in the back is not a disease, but a symptom of a multiplicity of diseases. It may not be a symptom of any one or more of a multiplicity of diseases, not only two or three, but a large number; and especially in the female; for example, all sorts of displacements of the uterus; anything that increases the weight of the uterus and brings tension to bear upon the ligaments or supports of the uterus is very likely to produce pain in the back. That is a very frequent symptom. And it may produce pain in the back not only by its direct dragging, but by its reflex effect upon the nerves supplying the back, and the reflex effect upon the nervous system in general.

Abscesses in the pelvis; abscesses in the fallopian tubes; chronic inflammatory conditions of the pelvis; tumors of the pelvis; cancer of the ovaries; cancer of the uterus; cancer of the tubes; cancer of the cervix; cancer of the vagina; cancer or hemorrhoids or any other morbid condition of the rectum.

Cancer of the bladder may produce it; stone in the bladder may produce it; inflammation of the bladder may produce it; gonorrheal infection may produce it in two ways, by increasing the weight and producing irritation of the uterus in one way, and it may produce it in the other way by infection through the blood, producing it in that way, affecting the muscles of the back, the sheaths of the muscles of the back, the tendons of the muscles of the back and ligaments of the spine.

It may result from stone in the bladder, or stone in the ureter, particularly a stone in the ureter; a stone in the pelvis of the kidney. It may result from sarcoma or a cancer of the kidney, or a stone in the kidney. It may result, and very frequently does in women, from a displacement of the kidney.

That is about all I can think of offhand. There are some more, I suppose.

Q.—Doctor, can you tell now—

Mr. Walker:—What is the matter with lumbago? Isn't that one?

Mr. T. J. Scofield:—Can you tell from the description of the pain—

The Witness:—I should speak of rheumatism of the back. Lumbago is not definite.

Mr. T. J. Scofield: *Q.*—Can you tell from the description of the pain, as described in the Birthday Almanac, what the cause of that pain is—from the description given there—could you diagnose the condition, and tell the cause of the trouble, without examination?

Mr. Hough:—Objected to as incompetent, irrelevant and immaterial.

THE COURT:—He may answer.

To which ruling of the Court the plaintiffs, etc., excepted.

The Witness:—No, sir; I could not. I don't think that any scientific physician would undertake to make a diagnosis of any condition merely from the symptom of pain in the back.

Mr. T. J. Scofield: *Q.*—Doctor, what in your opinion would be the effect of the hypothetical and medicinal solution which I have described to you, assuming that it corresponds to Wine of Cardui, in the treatment of this pain in the back? *A.*—Well, I think from the position of it, if it were given freely, that there might be some temporary alleviation of the pain, by virtue of the effect of the alcohol.

Q.—Where it is given, of course, in the doses I have already referred to. *A.*—I should think that might be so, yes. I should think, however, the secondary effect of the alcohol—in fact, I am confident it would be in the majority of these cases, if not all the instances I stated, be injurious; particularly so, where there is any inflammation of the urinary way, where a very small quantity of alcohol may result in extreme irritation.

Mr. T. J. Scofield: *Q.*—Now, Doctor, would it have any effect on the underlying cause of the pain, whatever that underlying cause might be? *A.*—In my opinion it would not.

The case was then adjourned until 2 o'clock the same day.

April 21, 1916, Afternoon

The Court met pursuant to adjournment. After discussion the Court adjourned until Tuesday Morning, April 25, 10 a. m.

April 25, 1916, Morning

TESTIMONY OF DR. G. FRANK LYDSTON (*continued*)

Dr. G. Frank Lydston resumed the stand in behalf of the defendants.

CROSS-EXAMINATION BY MR. HOUGH

Dr. Lydston was asked as to the best treatment for gonorrheal infection. He outlined what he would do in the case of a woman patient afflicted with gonorrhea. He outlined the diagnosis, describing the use of the microscope and mentioned the use of the complement fixation test. If the case was in its incipiency he would hope to cut the disease short by germicidal drugs; for example, permanganate of potassium varying in strength from one to five thousand to one in one thousand. Douches should be given in the recumbent position with large quantities of hot water. He would advise the patient concerning the danger of infecting others, particularly with relation to danger from gonorrheal conjunctivitis. He would say to the patient: "You must avoid absolutely stimulants of all kinds, even tea and coffee. You must avoid all

sorts of excitement, particularly of a sexual character. The best thing that you could do, would be to rest quietly in bed." If the disease had reached a moderate start, he would advise the patient to rest in bed in order to avoid a number of very serious complications which he mentioned. If the patient were depleted he would prescribe tonics containing iron, arsenic, etc., and perhaps bitter infusions of quassia, columbo or gentian. If the patient suffered from sleeplessness he would prescribe such sedatives as bromids and gelsemium, or small doses of chloral and veronal. He would prescribe prolonged sitz baths. He would attend to the condition of the bowels; if there was fever he would attend to that by appropriate remedies. The treatment would be directed chiefly toward destruction of the gonococcus.

The witness would consider also the question of infection of Bartholin's glands, which he described. He also described endometritis and its treatment, and spoke of extension of the inflammation to the fallopian tubes, with the formation of pyosalpinx.

He then considered secondary peritonitis and appendicitis and discussed a case of this character in which he had recently performed an operation.

He was then asked whether gonorrhea ever produced vaginitis. He replied that vaginitis in gonorrhea is not an important element; more important are secondary infections of the glands, etc. He was asked whether he ever treated gonorrheal infection by simply keeping the parts clean. He had not done so but practically always prescribed an antiseptic douche unless there were distinct contraindications.

Q.—Now, you stated the micro-organisms to be the cause of these infections. Is it not also the nonresistance of the tissues, does not that have something to do with it? *A.*—That is obvious, if the tissues were resistant to the micro-organisms, we would never have any disease at all.

Q.—And it is possible— *A.*—And you would not eat unless you were hungry, either.

Q.—Is it not possible to so strengthen the resistance of the tissues as that they can oppose the micro-organism? *A.*—You are speaking of strengthening the tissues in general? We can so increase—we cannot increase the resistance of the tissues, we have no method of increasing the resistance of the tissues so that we could be certain that we could prevent the inroads or action of any micro-organism, pathogenic micro-organism, disease producing micro-organism, but we can relatively increase the resistance in reference to many of them.

For instance, tuberculosis. A lack of resistance to the tubercular—the bacillus tuberculosis or the germ of tuberculosis or consumption, is the primary condition. That, however, is an entirely different thing. There is nothing particularly virulent about the tubercular micro-organism, as compared with this.

Q.—Would that be true in cases of gonorrhea? *A.*—I am going to give that. In the case of gonorrhea, I don't care how you may increase the resistance; I don't care how you may lower the resistance. Whenever a virulent gonococcus attacks your mucous membrane—good-night. You are going to have gonorrhea, and that is all there is to it.

Dr. Lydston stated that everyone who is exposed to gonorrhea does not become infected because of resistance of the tissues and variations in susceptibility.

Dr. Lydston described leukocytes and their relation to combating infection. Hyperemia in the beginning of infection would tend to aid the conditions, but is rapidly superseded by congestion which is not beneficial.

Dr. Lydston stated that he sometimes prescribes tincture of gelsemium, but that he does not know the exact alcohol content of it. He gives quassia in the form of infusion. He gives digitalis in the form of infusion. He stated that it is not necessary that the infusion contain alcohol.

Q.—When you prescribe medicine, Doctor, don't you pay any attention to whether there is alcohol in it, or not? *A.*—I might or I might not. That depends entirely on the condition for which I prescribe the medicine, the complications and the amount of alcohol in the preparation, the frequency of the dose and the duration of the treatment. I will state incidentally, however, that I avoid alcoholic preparations wherever I can.

Q.—Here is a preparation that you prescribe, or that you recommend containing fluidextract of ergot, tincture of gelsemium, potassium bromid, hyoscyamus, aurantii; do you know how much alcohol there is in that preparation? Now, once again, what is it? I will just let you read it. (Handing book to witness.) *A.*—Thank you very much. I was about to ask for that book. I have not seen it for a long time.

Q.—You will find the prescription referred to on page 141 of your book. *A.*—(Examining book). Well, you have helped me out here; you have gotten it all written out.

Q.—I did not intend to give you any help, but you can take advantage of it, if you like. *A.*—Oh, I don't care to take advantage of it. Something like 25 minims it would figure up.

Dr. Lydston did not consider that the alcohol in this prescription had any deleterious effect, as the bromid present was an antidote.

Q.—Would that amount of alcohol be cumulative, so that its effect would run over to the next dose? *A.*—You mean cumulative in that it would stay in the system?

Q.—Yes. *A.*—I have my serious doubts of it, but the effect of it would be cumulative.

Q.—That is, the beneficial effect would be cumulative? *A.*—Let us speak of the deleterious effect, please.

Q.—Well, would the deleterious effect be cumulative? *A.*—It would.

Q.—So that the time you gave the second dose of it, it is worse than the time you gave the first? *A.*—Please stick to your question, and don't try to trap me, because I am not here for that purpose, Mr. Hough.

Q.—I don't want to trap you. *A.*—You are trying to, and there is no use in it, because you and I are reasonable men. I am not going to lay any traps for you.

Q.—I am not trying to lay any trap for you. *A.*—The deleterious effect of the alcohol given as alcohol in 25 minim doses, either in one dose or however many times a day, if you will put your question in that way, then I will answer it.

Q.—Why not answer me whether the time you gave it, the second dose, it would be worse in its effects than when you gave the first dose? *A.*—Are you speaking of that prescription or the alcohol?

Q.—I am speaking of the alcohol in this prescription. *A.*—I have already eliminated that prescription, and told you that the alcohol in it produced no injury in that at all.

Dr. Lydston was repeatedly cross-examined concerning the action of the alcohol and the bromid in the prescription mentioned.

Q.—How can you say, if you know nothing about viburnum prunifolium, and carduus benedictus, that it might not counteract the effect of alcohol, as well as the bromid? *A.*—I do not believe that I said that, did I? Did we take that up?

Q.—Didn't you state— *A.*—I was asked whether I had ever used those preparations, I believe, and I was asked whether those preparations would cure gonorrhea. I said that preparation would not cure gonorrhea, and I stated my reason.

Q.—Didn't you say that the amount of alcohol in there was absolutely dangerous, on account of the inflammation? *A.*—I did.

Q.—Well, then, how can you say that it would be dangerous or would not be dangerous, without knowing whether or not the viburnum prunifolium or the carduus benedictus might not act on the alcohol the same as the bromid does on your alcohol? *A.*—Because bromid of potassium is a very powerful sedative, a very powerful sedative, and, as I remember, the hypothetical question there was nothing said about this remedy being a powerful sedative. Somewhat sedative.

Numerous questions were asked in relation to the hypothetical question and the amount of cnicin, carduus benedictus and viburnum in it in their relation to the alcohol.

Dr. Lydston testified that he has prescribed Hayden's Viburnum Compound perhaps half dozen times years ago.

Q.—In what case did you prescribe it? *A.*—I prescribed that several times before I was advised of its composition, under the inference that it contained viburnum. I do not now think it does—and I am sure that it does not. I think I prescribed it in a case of ovarian neuralgia, or something of that sort. I prescribed it very infrequently.

Q.—Well, you prescribed it for young girls for amenorrhea, haven't you? *A.*—No, I don't think I ever did.

Q.—Are you positive of that now? *A.*—I am not sure.

Q.—You won't say you have not? *A.*—I don't recall it. No, I would not say I have not. No, I would not say that, because I have used Hayden's Viburnum Compound on a moderate number of occasions—very little of recent years.

Q.—I hand you a bottle, and ask you if that is the medicine referred to? *A.*—Yes, that is Hayden's Viburnum Compound. (Examining bottle).

Q.—What is the percentage of alcohol? *A.*—Fifty per cent.

Q.—Without reference to whether you knew what the other ingredients were, you did know that it contained 50 per cent. of alcohol, didn't you? *A.*—No, I did not.

Q.—You did not even know that? *A.*—I did not; I have never seen the label of Hayden's Viburnum Compound since the Pure Food Act compelled them to put the percentage of alcohol on it.

Q.—How long have you used medicines without knowing what the ingredients were? *A.*—Oh, I very seldom have used medicine without knowing what the ingredients were. I cannot, however, always be absolutely certain as to a preparation, and we have to take even our official remedies—we have to take them very often without absolutely investigating to see what the proportion of this and that and the other is, excepting as regards the active principles.

Q.—Doctor, are you the author of a brochure entitled, "Why the Medical Association is Going Backwards, A Critique of the Medical Trust?"

Mr. T. J. Scofield:—That is objected to.

Mr. Hough:—He has testified that he is the author of certain publications.

THE COURT:—Has this anything to do with this case?

Mr. Hough:—I think it has, your Honor; I think it has a good deal to do with the case.

Mr. T. J. Scofield:—It is not cross-examination, and it is utterly immaterial.

Mr. Hough:—Can't I identify these by this witness?

Mr. T. J. Scofield:—Wait until I get through. It is an effort to bring in here an immaterial issue into this case, that is entirely collateral and it would require, if there is any investigation of it, going out a good distance, far afield.

Mr. Hough:—I should like to identify those two pamphlets by the witness. (Handing pamphlets to the Court).

THE COURT:—Yes, he may identify them. I do not see at this time that they are competent.

To which ruling of the Court in permitting the identification of said pamphlets, the defendants, etc., excepted.

THE COURT:—And of course it is understood that no use shall be made of the titles of those unless they are received in evidence.

Mr. Hough:—Yes.

Q.—Is that the name of it? *A.*—It is.

Q.—And you said you were the author of that? *A.*—I am.

(The pamphlet referred to is marked Plaintiff's Exhibit A. April 24, 1916.)

Q.—And you are also the author of that pamphlet entitled "How Simmons, Our Peerless Leader, Became Regular"? *A.*—I am.

Q.—Is that a copy of the brochure? *A.*—It is. (Having examined pamphlet.)

(The pamphlet last above identified is marked Plaintiff's Exhibit B. April 24, 1916.)

REDIRECT EXAMINATION BY MR. SCOFIELD

On redirect examination Mr. Scofield asked Dr. Lydston to explain the use, periods of dosage, and the number of doses per day of the prescription read by Mr. Hough. He stated that the book was written in 1899 and the prescription ordered one dose at bed time to get the sedative effect of the bromid and hyoscyamus.

TESTIMONY OF DR. W. W. CORNAG

Dr. Cornag was called as witness for the defendants.

DIRECT EXAMINATION BY MR. WALDO

Dr. W. W. Cornag testified that he has been practicing medicine for twenty-six years in Lavonia, Ga. He has had some experience with McElree's Wine of Cardui. He was called to see a Mrs. J. S. She related that she was suffering with falling of the womb and hemorrhage, pains in the pelvic organs and in the back. She had been taking Wine of Cardui for about a year without relief. He made a pelvic examination and found her womb down to a small extent, enlarged, and there was a slight hemorrhage that had been going on at irregular intervals. He advised her to have an operation. A surgeon was called and he suspected there might be cancer of the womb. At the time of operation the surgeon found what he thought was the beginning of a cancer of the uterus and a small cyst of the ovary. He amputated the body of the uterus and removed the cyst. The woman has been in good health since.

Mrs. G. R. told the witness that her menstruation had stopped for a year and she had been gradually getting weaker. She thought she had some uterine trouble and had been taking Wine of Cardui, but without relief. He found that her weakness and suppression of menstruation was due to consumption. The woman died of this disease about four months after he first saw her. Mrs. G. R. told him that she had taken several bottles of Wine of Cardui for about a year.

Mr. McW. was a patient of the witness for alcoholism. This patient stated that when he could not get whisky, he would drink Wine of Cardui. The occurrence was seven or eight years ago. The witness saw McW. drink perhaps one-fourth of a bottle on one occasion.

The witness stated that he was called to see Mrs. Y., who was complaining of pains in the region of the uterus, with burning sensations, pains in the back, and whites. On pelvic examination he found a gonorrheal infection of the womb and tubes. This patient stated that she had been taking Wine of Cardui off and on and she had been ill for eighteen months. He treated her for a heart disturbance. The patient died about two weeks ago of pneumonia.

Another patient, Mrs. C. R., complained of pains in the pelvic region, painful menstruation and whites. He found on examination that she had a syphilitic ulcer of the mouth of the womb. The patient stated that she had taken Wine of Cardui without being relieved. He was able to get her in pretty good shape with specific treatment for syphilis.

Another patient was F. M., who complained of scanty, irregular and painful menstruation and sterility, for which she had taken Wine of Cardui, without relief. On examination he found that the mouth of the womb was small—there was no diseased condition. He advised her to have an operation which she refused.

CROSS-EXAMINATION BY MR. WALKER

On cross-examination the witness testified that he came to Chicago about four weeks ago. He received a notice from the secretary of the state medical society asking if he knew anything about the use of Wine of Cardui, and later he met Dr. Heizer in Atlanta, Ga. The witness is a member of the American Medical Association. He has not resubscribed for THE JOURNAL, which he has taken off and on at various periods. He understands that his expenses will be paid and that he will receive a reasonable per diem for the time lost during his attendance in Chicago.

He was repeatedly cross-examined concerning the names and addresses of his patients and he promised to give this information to the counsel for the plaintiff. He was also repeatedly examined concerning the incidents described in the direct testimony.

Q.—Doctor, do you keep a drug store? *A.*—Yes, sir.

Q.—At Lavonia? *A.*—Yes, sir.

Q.—You still run it? *A.*—Yes, sir.

Q.—How long a time have you been running a drug store? *A.*—Ten years about.

Q.—During all the time that you were treating the patients that you have named here, you had that drug store? *A.*—Yes.

Q.—Who is taking care of your drug store, and of your business? *A.*—My daughter is in charge of it.

Q.—She is a pharmacist, is she? *A.*—No, sir, I don't run a prescription business; I run a retail "patent medicine" and stationery business.

Q.—You sell "patent medicines"? *A.*—And carry my own pharmaceuticals.

Q.—Well, do you sell Peruna? *A.*—Oh, yes, sir.

Q.—Lemon Extract? *A.*—Yes.

Q.—Aletris Cordial? *A.*—No, sir.

Q.—Hayden's Viburnum Compound? *A.*—No.

Q.—You don't sell anything that doctors ask for on prescription? *A.*—I don't fill prescriptions, I am not licensed.

Q.—Do you carry Lydia Pinkham? *A.*—Yes, sir.

Q.—Her remedy? *A.*—Yes, sir.

Q.—What others? *A.*—Wine of Cardui.

Q.—How long have you carried Wine of Cardui? *A.*—Oh, about eight or nine years.

Q.—What others? *A.*—I don't know; I have got—

Q.—Duffy's Pure Malt Whiskey? *A.*—Sir?

Q.—Duffy's Pure Malt Whiskey? *A.*—No, they would not let me sell that in my town.

Q.—Hostetter's Bitters? *A.*—No.

Q.—What other medicines, besides those named? *A.*—I got Harder's Iron Tonic.

Q.—How much alcohol is in that, do you know? *A.*—I do not know.

Q.—What else? *A.*—I could not tell you, just a small line of patent medicines that people ask for mostly, that is all.

Q.—Do you carry any drugs yourself? *A.*—I carry my pharmaceuticals, that I use in my practice.

Q.—What school did you graduate from? *A.*—Atlanta Medical.

Q.—What is that, Regular? *A.*—Yes.

The witness was then asked questions regarding the various sects in medicine. He was asked concerning the disposition of his practice while he was attending the trial in Chicago, and questioned in detail concerning his treatment of Mrs. Y, who suffered with gonorrhea. He gave her an astringent douche, digitalis and salines. He also gave her Blaud's pills. He did not prescribe "Cardoseptic."

Q.—You mentioned some iron remedy that you keep there, some patent or proprietary medicine? *A.*—Harder's Iron Tonic.

Q.—Did you give her that? *A.*—No, sir, I don't prescribe patents.

Q.—How much alcohol was in that? Well, you recommend them, don't you? *A.*—No, sir, I do not.

Q.—You just sell them? *A.*—Yes, I sell them, when they ask for them.

The witness was then questioned in detail concerning the case of Mrs. C. R., who had syphilis. He treated her with mercury and iodids, and prescribed an antiseptic douche.

The witness was then asked if he recognized the signature of Mr. McW. He could not identify the signature.

Q.—He told you that when he could not get whisky, he would take anything that had it in it? *A.*—He preferred Wine of Cardui.

Q.—Did he also tell you that he would take anything that had alcohol in it? *A.*—Well, he said he had to have alcohol.

Q.—Did he buy it of you? *A.*—Yes, he did.

Q.—Over what length of time had he bought Wine of Cardui from you? *A.*—He was the first man that ever I knew of buying a bottle in my place for intoxicating purposes, and right then I instructed my clerk not to sell him any more.

Q.—When did he first buy Wine of Cardui from you? *A.*—It was about seven years ago.

Q.—You say he bought it then for intoxicating purposes? *A.*—He did.

Q.—How did you know that? *A.*—He told me he did.

Q.—Did he drink it there in your store? *A.*—No, he drank it in his room.

Q.—Is that the occasion that you saw him drink a quarter of a bottle? *A.*—Yes.

Q.—How much did he buy? *A.*—That one bottle, is all I can testify to.

Q.—Had he bought Wine of Cardui before? *A.*—I think he had.

Q.—Is that the reason that you think—that is the first time you knew he bought it to drink himself? *A.*—It is the first time I knew anybody was using it for that purpose in my community.

Q.—How long had you carried it then? *A.*—I had carried it about three years.

Q.—When was the last time you sold McW. any? *A.*—That was the last time I think.

Q.—Has McW. ever purchased any for his wife or daughter? *A.*—He has not got a wife.

Q.—Has he got a daughter? *A.*—No, sir, never has been married.

Q.—Does he live with his sisters? *A.*—No, he was boarding at a hotel.

Q.—A hotel in the town where you are? *A.*—Yes.

Q.—What hotel? *A.*—The Lavonia Hotel.

Q.—Did you have a clerk at your store? *A.*—Yes, sir.

Q.—Other than your daughter? *A.*—Yes, sir.

Q.—Seven years ago? *A.*—Yes, sir.

Q.—Who? *A.*—J. T. Holland.

Q.—How long did he work for you? *A.*—He worked for me about three or four years.

Q.—When did he quit? *A.*—About a year ago is the last time he has been with me.

Q.—What is his full name? *A.*—John T. Holland.

Q.—Where does he live? *A.*—At Lavonia.

Q.—Is he there now? *A.*—He is the man that sold McW. this bottle of Wine of Cardui. He asked McW. why he was buying it, and he says—

Q.—There is no question pending. Did you see McW. drink that bottle? *A.*—Yes, he drank part of it.

Q.—Were you there when he drank it—when he bought it? *A.*—No.

Q.—Well, did this clerk that was working for you, see him drink it? *A.*—No, sir.

Q.—How did you come to see him drink it? *A.*—I was called out to his room that evening.

Q.—At the hotel? *A.*—Yes, sir.

Q.—And you went over to the hotel? *A.*—Yes, sir.

Q.—Who told you the conversation that he had, between the clerk—*A.*—The clerk.

Q.—Well, what was it he said? *A.*—I asked the clerk if he had not made a mistake in charging it, wasn't it a mistake about him getting that bottle of Wine of Cardui. I saw it on the book there, and he says, "No, he come in here and went behind the counter and looked around the shelves and he pulled down a bottle of Wine of Cardui, and told me to charge it to him. I asked him what he was buying that stuff for, and he says 'I am buying it because it has got more alcohol in it than anything on that shelf'." That is what the clerk told me.

The witness stated that he sold about eighteen bottles of Wine of Cardui a year.

Whereupon the further hearing of the case was adjourned until 2 o'clock the same day.

April 24, 1916, Afternoon

TESTIMONY OF DR. ALONZO C. TENNEY

Dr. Alonzo C. Tenney was called as a witness for the defendant.

DIRECT EXAMINATION BY MR. T. J. SCOFIELD

Dr. Tenney testified that he is a practicing physician residing in Chicago. He graduated at the Hahnemann Medical College in 1895. He is a homeopathic practitioner. After graduation, he spent a year as intern at the Hahnemann Hospital. He is a member of many homeopathic medical societies and has held office in practically all of them. He has done postgraduate work at the University of Chicago, the Chicago Clinical School, the Chicago School of Electro-Therapeutics, the Graduate School of Harvard University and the New York Postgraduate School.

Q.—Doctor, will you explain what are the fundamental principles of the law of similars, the homeopathic law, as I understand it, of drugs and cure? *A.*—I did not quite get the first part of that question.

Q.—Doctor, what are the fundamental principles of the law of similars? *A.*—The homeopathic practice is based upon what we call the law of similars. That law is exemplified in this way: We give the drug that we want to learn about to a healthy human being. This healthy human being we call a prover. And the conditions which are produced in his body or her body as the result of the administration of a drug, we call a proving. These provings are shown by symptoms, or they are results recorded by symptoms, changes in the feelings and condition of the prover; that is our guide to the administration of a drug. When we find in a sick person a set of symptoms produced by a disease which are the parallel of a set of symptoms which we have produced artificially by the administration of some drug, we think of that drug as the one which will produce changes in the patient's body leading to recovery. Now, in proving our drug we give material doses, that is, we give big doses. We begin carefully and keep on increasing and increasing the dose, always being careful not to poison the person fatally. This work has not been done much of recent years.

But when we come to prescribe for a sick person we do not use a large quantity of the drug. We use very small quantities. And now here is a second point in our belief. A drug may be so altered, we believe, by dilution, by attenuation, by grinding up with sugar of milk or diluted with alcohol and water, to such an extent that its molecular parts are separated, and that the chemical affinities which exist in that drug become active in the human body to cure disease. A more recent method of describing this process is to refer to what is known as the ionic theory, but that is a rather complicated thing, and I do not think it is necessary.

Q.—All right, Doctor, are you familiar with the homeopathic method for prescribing viburnum prunifolium? *A.*—No, I am not.

Q.—Why not, Doctor? *A.*—Because viburnum prunifolium has never been proven. It has never been tested on a healthy human body, and there can be no homeopathic basis without this preliminary knowledge of the drug's action.

Q.—Then you are not familiar with the indications for that drug? *A.*—No, there are no homeopathic indications for it. It has never been proven.

Q.—Now, in your experience of 20 years or more in the practice of medicine, have you ever used viburnum prunifolium? *A.*—Yes, I have used it empirically on the ground given me when I was a student.

Q.—To what extent have you used it, Doctor? *A.*—Well, when I first began practicing, over 20 years ago, I used it quite frequently. It was then given in the books on materia medica as a drug for certain ailments with which women were suffering. I used it repeatedly. I had no results from it. It proved absolutely worthless in my hands, and very unfortunately so.

Q.—Doctor, are you familiar with the homeopathic method of prescribing cnicus benedictus? *A.*—Yes, I am.

Q.—Upon what are these indications based? *A.*—They are based upon the provings of cnicus benedictus.

Q.—Well, are you familiar with what you call the provings, the homeopathic provings of cnicus benedictus? *A.*—Yes, I am familiar with those provings.

Q.—Now, what do those provings show, Doctor, with reference to the effect of the drug upon the reproductive organs of the female? *A.*—It shows no effect upon the pelvic organs at all.

Q.—Well then, what are your conclusions with reference to the clinical value of this drug in the treatment of pelvic diseases of women? *A.*—My conclusions are that the provings of this drug do not point to them at all, and that it could have no basis in homeopathy whatever for prescription in that condition, in that class of diseases or ailments; pelvic troubles.

Q.—Doctor, according to the homeopathic theory of medicine, should drugs ever be used in combination? *A.*—No, we give, according to our strict homeopathic theory, only one drug at a time.

Q.—Now, take these two drugs which I have mentioned, namely, viburnum and cnicus benedictus, and suppose these drugs are used in doses of approximately three grains of the extractives from the bark of viburnum prunifolium, and the extractives from approximately 30 grains of cnicus benedictus, and that they are combined in these proportions with 48 drops of alcohol to each dose of a tablespoonful, in your opinion could such a combination be used for the treatment of pelvic disorders of women on the homeopathic theory of practice? *A.*—No, absolutely not on the homeopathic theory.

Q.—Now explain why. *A.*—Well, to begin with, we have no proving of one of them, so we do not know what is its field of action. In the second place we are given drugs in combination and even if we credit these two drugs with the virtues which in some instances they are supposed to have, their field of action is different; one affects one set of organs, the other, if it affects anything, affects another set of organs. There would be no excuse, according to our homeopathic theory and practice and experience, to combine these drugs. In the third place, they are made with a twenty per cent. alcohol, as I understand the question. Now, our homeopathic tinctures are made with a much stronger amount of alcohol; they are made with the strongest alcohol used in ordinary pharmaceutical work, running 93 per cent. by weight and 98 per cent. by volume pure alcohol. That alcohol, with our homeopathic tinctures will extract resins and other alcoholic extract. Therefore, our provings of cnicus benedictus would be provings of an entirely different substance from a 20 per cent. alcoholic extract of cnicus benedictus. It would have things in it which would not and could not, by any stretch of the imagination, be in this hypothetical solution.

The homeopathic method of prescribing is different. We use the drug in attenuations. The dose here would be altogether too large to

have any of the therapeutic effects which we expect to get by the administration of our drugs homeopathically. And it occurs to me that there would be serious doubt whether the dose is large enough to have the physiologic effect which we sometimes endeavor to get. So on every count there is no possible application of this substance you have described in homeopathic practice.

Q.—Now, Doctor, you have stated that on the strict theory of homeopathic practice medicines are not given in combination. In actual practice do conditions ever arise under which you do prescribe drugs in combination? *A.*—Yes, such conditions do arise.

Q.—Explain why, and under what circumstances? *A.*—Sometimes we want to physic a patient, we want to stimulate the kidneys, we want to quiet the nervous system. Take a physic, for instance, to illustrate the point. We might use what is prepared by our homeopathic pharmacists for that purpose, a combination of two or three or four drugs, all of which act upon the liver of the intestines and the liver, but using small doses of each individual drug so as to avoid any of its poisonous effects and combining it with other drugs acting upon the same organ or related organs to get nothing but the stimulative, laxative effect. In that way we may use drugs in combination.

The witness was then asked a hypothetical question similar to that asked of previous witnesses and he stated that he had an opinion as to the physiologic action and therapeutic value of the hypothetical medicine on the homeopathic theory of practice. He stated that there was no foundation whatever for this hypothetic prescription.

Q.—Well, now, a little more in detail, Doctor. In what way, Doctor, does it fail to comply with the principles of homeopathy? *A.*—It is not a tincture, to begin with. It is not a homeopathic tincture. There is a 20 per cent. solution; 20 per cent. alcoholic extract of the drug prescribed in it—or of these two drugs. There are two drugs combined, which is antagonistic to the homeopathic practice. There is no proving. The dose is too large for the homeopathic effect, and even if we credit the cnicus benedictus here with having the same effect as we would if it were a homeopathic tincture, it is faulty because it is a combination of two drugs at the same time, and as I have already said, the tincture derived homeopathically by the homeopathic pharmacist would be an entirely different substance from that described here.

Dr. Tenney stated that the hypothetic medicine could not affect gonorrhea either in acting on the germ or through any action on the tissues of the body. He stated that it would not have any effect on uterine prolapse nor would it cure retroversion or retroflexion nor sterility nor menorrhagia nor metrorrhagia.

A.—In dysmenorrhea there could be no effect on any of the causes which I have in mind for dysmenorrhea, except possibly the effect of the alcohol, the same as when a patient takes a little hot gin for a painful menstrual period, something of that sort.

The hypothetic medicine, he stated, would not cure amenorrhea and there is no occasion for its use in puberty or in pregnancy. Such a medicine could not be used according to the homeopathic school as no routine prescriptions are used by that school. Dr. Tenney described the method of preparing homeopathic tinctures.

CROSS-EXAMINATION BY MR. HOUGH

On cross-examaniation, Dr. Tenney stated that in a dosage of 5 drops of alcohol and one one-thousandth part of viburnum, the dose would be given perhaps at intervals of fifteen minutes for one hour or two and then gradually lengthening the interval to two hours, three hours, etc., but it is not practicable to give such large doses. The effect of those doses would be that of alcohol only as though no viburnum was present. He stated that the fact of a drug appearing in the homeopathic pharmacopeia means that the druggist has it to sell. The publication of the drug does not mean that it has been proven. He described the use of the homeopathic pharmacopeia of 1914 and stated that like himself, the great majority of homeopathic physicians with whom he is acquainted have discarded viburnum prunifolium. He has prescribed carduus benedictus a few times and it gave no good results, so he discontinued its use. In place of carduus benedictus he uses mercurius corrosivus, mercurius dulcis, mercurius iodatus. There is no alcohol in these preparations. They are reduced to the third X with sugar of milk. Among other remedies which contain alcohol he uses gelsemium, bryonia, chelidonium. Lycopodium which he gives is prepared in powder.

The witness stated that he has never made provings of any drug; if the drug, as mentioned in a textbook, appeals to him, he tries it.

Q.—Well, to commence with, all you know about it is what your literature, that is, homeopathic literature, shows to have been proven, don't you? *A.*—Well, the literature does not always show things to have been proven, you know. Because a thing is written don't make it so.

Q.—You mean the book of provings in the homeopathic school is not accepted by you? *A.*—Oh, no, I don't mean that. You must understand these provers were people who made their living to a very great extent, by proving, and some of them were very profoundly affected by the drugs they took. Some of them were rendered sick and remained so the remaining portion of their lives. Now, these people sometimes did not recognize the fact that the effect of a drug like mercury or iodin or arsenic had not passed off, and they would be proving another drug and reading into the provings out of their own ignorance—possibly of the man who was employing them at that time—they would be reading into the provings these provings of the previous drug possibly, so that our old provings, although we regard them with a great deal of respect, and take them with a great deal of consideration, are not, in the light of our modern knowledge, to be relied upon absolutely. And that is the consensus of the homeopathic physicians who are up to date today.

The witness stated that he had not heard of anyone using viburnum prunifolium in cases of threatened miscarriage. The witness testified that according to his present knowledge, viburnum prunifolium was not used for a number of complications mentioned by Mr. Hough. He stated that carduus benedictus had been proven but this does not mean that it was not inert. There are several hundred drugs in the homeopathic pharmacopeia and there are others besides viburnum prunifolium and carduus benedictus which are inert. Asked to mention some, he stated:

A.—Well, I will give you a few examples, but to go through the whole pharmacopeia, I am not competent to do. But there is an instance: Somebody made a proving of the effect of the steel taken from the north pole of the horseshoe magnet. This fellow was a long haired enthusiast, in my opinion; those who know anything about him or his provings or the things he claimed for that drug do not pay any attention to it. In regard to viburnum prunifolium, there has been no proving of it. We disregard that. And as to cnicus benedictus, I think that the majority of us know that it has no effect. And in regard to—

Q.—I am asking you about something that is in the pharmacopeia. Aren't you naming something that is not in the pharmacopeia? *A.*—Well, I don't know as to that. I am thinking of the things that have been discarded by the majority of us.

Q.—Well, I am not asking about anything that has been discarded and is not in the pharmacopeia. *A.*—Now, there is sugar of milk, that is in the pharmacopeia. I think somebody made a proving of sugar of milk once. You see we have enthusiasts in all walks of life, and some of them have brought the homeopathic school into disrepute, which we very much regret.

Q.—I don't see it here. *A.*—All right. Possibly you had better let me have the book, and look through it for a few of those drugs. I cannot recall them off hand.

Q.—Sugar of lead is the only one in fact— *A.*—Sugar of lead would be an active drug.

Q.—You spoke of sugar of milk, which I don't see there. (Handing book to witness). *A.*—Carbo-vegetablis, vegetable carbon. We will call that out of the active drugs.

Q.—Well, is that sugar of milk? *A.*—That is vegetable carbon; charcoal.

Q.—I say, is that sugar of milk? *A.*—No, it is not. I have answered that.

Q.—You don't find sugar of milk there? *A.*—I have not looked for it. You said it was not there, and I took your word for it. We will look for saccharum lactis; that is the homeopathic name for sugar of milk. I don't find sugar of milk.

Dr. Tenney was then asked concerning extracting of drugs with alcohol. He recognized that there is such a thing as synergism. He is not a member of the American Medical Association unless some of his connections automatically make him a member. He is a subscriber to THE JOURNAL and is a member of the Chicago Medical Society. He was then cross-examined in detail concerning assumptions in the hypothetic question.

He was then asked to state in brief his method of treatment of gonorrhea. He gives an antiseptic douche and by mouth he gives laxatives, also iron or any tonic which may be necessary, and advises the patient to avoid exercises, alcohol and coffee. He put her on a simple nutritious diet. He usually gives iron hypodermically.

Q.—Is there any alcohol in the tonics you give? *A.*—In any of the tonics that I give in gonorrhea, you mean?

Q.—Yes. *A.*—Not that I know of. I try to avoid all alcoholics in my remedies.

Q.—What do you mean by "not that you know of?" *A.*—Well, here is the idea. Once in a while some detail man comes along from Parke-Davis & Company and says, "Doctor, here it is at last." He

will leave a sample bottle, and later when I am in a hurry, some people will come in with a condition he has just described, and you will say, "How fortunate that is, here is a patient here that we have just been told how this medicine will act on him." And we give him that, and possible find out the next day that it contains alcohol. May be it is a good remedy and may be it is not. That sort of thing, of course, is not in accord with the kind of work which we aim to do all the time. But those are the circumstances when these little things creep in, under your guard, as it were.

Q.—But you know how much alcohol is in it at the time you prescribe it, don't you? *A.*—Well, we do now, if we prescribe those things, because the pure food and drug law has been in operation—

Q.—And you have known it since 1906? *A.*—Well, with that correction, I should say I never prescribe alcoholics, without knowing it, since 1906.

Dr. Tenney was asked concerning his treatment of prolapse of the uterus. He described the various degrees of prolapse and mentioned the treatment. He mentioned certain cases of sterility which might be cured by medical measures, for example, obesity as a case may be cured by thyroid extract; anemia by administration of iron and arsenic, etc. He would treat stenosis of the cervix by surgical or mechanical means. He described stenosis of the cervix and its complications and the method of treatment. In treating dysmenorrhea, he would give something to relieve the pain. He could not think of a single case of stenosis which would not be benefited by an operation. He was asked as to the treatment of hematometra. He would give ergot or pituitrin and perhaps pack to prevent bleeding.

Q.—You mean you would use a uterine medicine? *A.*—A uterine medicine?

Q.—Yes. *A.*—Well, as homeopaths, we don't know uterine medicine. We use some remedies that act upon the womb, like pituitrin, for instance, or ergot; but they act upon all parts of the unstriped muscle tissue equally as such.

Q.—Those are allopathic remedies? *A.*—No, no; they belong to any physician who wants to use them. They are not allopathic. There is no such thing as allopathic any more.

Q.—What do you call it now? *A.*—Well, we have the—we are physicians. There are a few who still cling to certain of their homeopathic belief, and homeopathic practice, and so we sometimes are mentioned or spoken of as homeopathic physicians; but we don't—we don't divide the thing up into a lot of wrangling sects.

THE COURT:—You mean that nobody is so bigoted today that he is unwilling to make use of somebody else's medicines, if he believes it is best for the particular disorder that he has in charge?

The Witness:—That ought to be published, Your Honor; that is very excellent.

Mr. Hough: *Q.*—Well, when you say you don't know any such thing as uterine medicine, you are speaking as—not as an allopath, but as a homeopath? *A.*—No, sir. I am speaking as a physician. I don't recognize anything as being especially a uterine medicine. There are certain medicines which act upon the uterus more apparently than they do upon other tissues; because the uterus is the biggest mass, outside of the heart, of unstriped muscle tissue in the body. And ergot contracts unstriped muscle everywhere. It blanches the fingers, the nose, the ears, the tongue, the lips, and it contracts the uterus. Why does it blanch these parts? Because it contracts the unstriped muscle tissue in the arterial vessels. And it contracts the unstriped muscle tissue of the womb. It is a remedy which acts upon the whole circulatory apparatus. The same is true of pituitrin; the same is true of adrenalin chlorid. The same is true in a lesser degree of hydrastis, or hydrastinin.

Q.—Any others you can think of? *A.*—Those are the drugs upon which I depend more especially. I will mention another, eserin sulphate has that effect.

Q.—Did you ever use apiol? *A.*—Apiol?

Q.—Yes. *A.*—Yes, I have used it. It is a French preparation that has failed me.

Q.—Failed you? *A.*—Yes; it has not given the results it was supposed to give.

Dr. Tenney was asked concerning his treatment of amenorrhea; he stated that if due to anemia, he would give iron, arsenic, and quinin; if tuberculous, he would use outdoor treatment and diet; if stenosis, he would operate on the stenosis; if chlorosis, he would give iron, arsenic and an extract of bone marrow; if due to obesity, he would treat obesity. He would treat amenorrhea as a symptom.

Q.—Don't you prescribe according to the symptoms? *A.*—And we treat the underlying cause back of this symptom in order to correct the symptom.

Q.—Don't you prescribe according to symptoms? Isn't that homeopathy? *A.*—Well, yes—you know—I think the best illustration of the difference in the line of attack of the homeopathic physicians and the rest of the medical world, may be well illustrated in this way. You go to church, and you hear the minister preach about Noah building the ark. One minister begins with Noah, and another begins with the Ark, and tells all about it; but they are both talking about the same subject. In some things homeopathy starts after the symptoms first; but we are always looking for the underlying cause, trying to relieve that; otherwise, we would not be able to hold our heads up in this modern world. The old school men very frequently start right after the diagnosis and explain the symptoms from their diagnosis. But we are all working to the same end.

Q.—Well, the practice of homeopathy teaches the prescribing for the symptoms, doesn't it? *A.*—Well, the original teachings, yes. You must remember that the progress of medicine in the last fifty years has been very great—

Q.—Well, are you practicing homeopathy now? *A.*—I am practicing homeopathy plus. I am practicing medicine, and I use my homeopathic remedies, my homeopathic philosophy and my homeopathic lines of procedure, where they do good for my patients. Where they don't do good, I discard them.

Dr. Tenney testified as to drugs mentioned in the homeopathic pharmacopeia for the treatment of amenorrhea and as to the quantities of alcohol in these preparations. He stated that alcohol would have no effect on the condition.

Q.—Did I understand you to say that pregnancy is not a pathological condition? *A.*—Certainly you did understand me to say that, if I have been asked that question. Pregnancy is a normal condition—if it is a normal pregnancy.

Q.—And therefore would not be considered pathological? *A.*—Certainly not.

Q.—But purely physiological? *A.*—Purely physiological.

Q.—Did you hear Dr. De Lee's testimony? Were you in court? *A.*—I heard a portion of it.

Q.—You disagree with him?

Mr. T. J. Scofield:—If the Court please—

THE COURT:—He said the same thing.

Mr. T. J. Scofield:—Dr. DeLee said the same thing.

THE COURT:—He said an absolutely normal case was not pathological.

Mr. Hough:—I did not ask him about an absolutely normal case.

THE COURT:—That is what this witness said. He said the normal pregnancy is physiological.

Mr. Hough:—I asked him if pregnancy is pathological—is it ever pathological?

The Witness:—You asked me if a normal pregnancy was a diseased condition, or something of that kind.

Mr. Hough:—I did not use the word normal.

The Witness:—A normal pregnancy is normal.

Mr. Hough:—Of course.

The Witness:—Yes.

Mr. Hough: *Q.*—If it is pathological—

The Witness:—A pathological pregnancy is pathological.

The witness then mentioned some of the complications of pregnancy. He described the care of a patient in a pregnant condition. If patients require tonics he usually gives them in powdered form without alcohol.

Q.—How long have you been giving medicine without alcohol, since this case started? *A.*—No, no, indeed. I have not even—I don't think about the amount of alcohol—I just did that to save you the trouble of asking me how much alcohol there was in it.

Q.—You mean you never give any medicine you think there is any alcohol in, in any of those conditions? *A.*—No, no—I might give something containing alcohol. Some of them I prescribe alcohol for, but that is very rare.

Whereupon the hearing of the above case was adjourned until Wednesday, April 26, 1916, at 10:30 o'clock a. m.

April 25, 1916, Morning

The Court met pursuant to adjournment. On motion by Mr. Walker, who informed the Court of the death of one of the plaintiffs, the Court was adjourned until Tuesday, May 2.

May 2, 1916, Morning

The Court met pursuant to adjournment. Mr. Walker informed the Court of the death of the plaintiff, Mr. John A. Patten, and stated that it was desired to proceed in the partnership case.

(To be continued)

The Work of the Young.—The fact that young persons' fingers are nimble, and their actions quick should not be taken advantage of by allowing disastrous exhaustion to lessen their vitality at this most important period of life. Particularly does this apply to the permitting of piece-work, and monotonous or steady, straining processes.—Hayhurst.

Correspondence

What Is a Vitamin?

To the Editor:—The following statements I wish to make in justification of my position as the author of the term "vitamin" as well as in refutation of some of the statements printed in your editorial entitled "What is a Vitamin?" (THE JOURNAL, May 6, 1916, p. 1470). I have no doubt that the sense of justice and fairness which have always impressed me in your publication will guide you to publish my letter in an early issue of THE JOURNAL.

When early in 1911 I started the research which led to the isolation of the vitamin-fraction from various foodstuffs, my work was inspired by the remarkable results of Eijkman, Grijns and Schaumann, who were able to prove that in rice-polishings and in yeast, substances are present which protect fowls, pigeons and men against beriberi. My task was then to find out to which chemical group these protective substances belong, and this has been successfully accomplished and described in two publications (*Lancet*, London, Nov. 4, 1911; *Jour. Physiol.*, Dec. 22, 1911). From reasons unknown to me, references to these two early publications are usually omitted in the literature, and the paper of Hopkins (*Jour. Physiol.*, 1912, xliv, 425) is quoted, which has been undoubtedly partially influenced by my work. It was only in 1912 (*Jour. State Med.*, June, 1912) after a careful revision of my experimental data that I introduced the term "vitamin" for these protective substances which are indispensable for life and which, judging from their chemical reactions, belong undoubtedly to the group of organic nitrogenous bases. Later on I went farther, and a few substances were isolated and analyzed which, I have reasons to believe, are chemically related to the original vitamin present in less purified fractions. I am glad to say that even now, after five years, there is not a single paper in the existing literature able to refute my experimental data. That the introduction of the term "vitamin" was justified we can judge from the quick succession of terms used to designate the same substances: torulin of Moore, Oryzanin of Suzuki, antiberiberin of Tsuzuki, accessory substances of Hopkins, and finally substances A and B of McCollum. If terms could only be applied to chemically pure, fully identified substances, 90 per cent. of the already existing names in the physiologic chemistry would have been discontinued (examples: names of ferments, hormones, proteins, nucleins, polysaccharids, lipoids, cerebrosids, etc.).

As to the necessity of two different substances (one soluble in alcohol and the other in water) for growth of young animals, the work done in conjunction with A. B. Macallum was not able to substantiate it. Vitamin is soluble in alcohol and more so in water, but we are dealing here with one and the some substance. Our present results so far show that the beriberi-vitamin suffices for growth of young rats; for long maintenance (over sixty days) a small supply of antiscorbutic vitamin seems necessary; otherwise scurvy with even slight rachitic symptoms occurs in rats. This condition can be avoided by using autolyzed (wet) yeast or orange juice, in difference to dried yeast, which apparently possesses no antiscorbutic properties for rats. So far in our experiments butter was found to have no action on the growth of rats, but was found to have slight antiscorbutic effect (scurvy-vitamin carried down from milk). In order to avoid further complications and fallacies in the already complicated problem of growth in rats, we wish to test our preliminary results in all directions before final publication; but we find that some of the recent results on the growth of rats, on which your editorial is based, give not the slightest justification for the discontinuation of the term "vitamin."

In the same issue of THE JOURNAL, Dr. E. J. Wood deals with pellagra as being due to a deficiency of vitamin. Apparently by mistake my name was omitted as the originator of this hypothesis (*Jour. State Med.*, June, 1912; "Die Vitamine," Wiesbaden, 1914). Later on I pointed out (*Jour. Physiol.*, December, 1913; *München. med. Wchnschr.*, 1914, No. 13) that the acute form of pellagra prevailing in the United States might be due to the use of extensively milled corn, to which conclusion Dr. Wood also arrives.

CASIMIR FUNK, M.D., New York.

Teaching Units and Mergers of Medical Colleges

To the Editor:—I have read the Current Comment on this subject (THE JOURNAL, May 6, 1916, p. 1471) with much interest. It points the direction that medical education will have to take, but a word of warning should be sounded lest a fetish be made of the word "university," and weak medical schools be linked together without having real university methods and equipment. Medical teaching cannot be improved until the unit system is established in the clinical as well as in the laboratory branches. How many universities have put their clinical teaching on a university basis? How many provide their professors in the clinical branches either directly or indirectly with hospital wards, dispensaries and laboratories? How many are prepared to meet the university ideal that a professor in a clinical branch shall have an active service of at least sixty beds and shall not attempt to give bedside instruction to more than a proportion of one student to three beds? Here is where the application of the unit system is needed. The old idea that there should be but one professor, *the* professor, must go. A university must increase its units in the clinical branches because of the very nature of things. A professor cannot *properly* look after more than sixty bed patients, and a patient can be observed and studied by only a few students at the same time and then only once in a day. It is this feature that makes proper medical education so costly. In dealing with inanimate objects, the same apparatus and equipment can be used over and over again even on the same day, but, of course, patients cannot be so used.

By all means let us have university control of medical schools, but let us be sure that the university will assume the same degree of responsibility in teaching the clinical branches that it does in teaching the other sciences. Let us make sure that universities are not used as a cover for concealing inadequacies in financial resources or control of clinical material.

OTTO V. HUFFMAN, M.D., Brooklyn.
Secretary of the Faculty, Long Island College Hospital.

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

OWNERSHIP OF ROENTGENOGRAMS

To the Editor:—I am writing to inquire whether or not there has been at any time a court decision with regard to the ownership of roentgenograms. As a rule, there are three claimants, each presenting arguments which to him seem conclusive, namely, the roentgenologist, the physician and the patient. The situation has been a nuisance to several of us in this community at various times.

A. B. DIEFENBROCK, M.D., Sacramento, Calif.

ANSWER.—We can find no cases touching directly on this subject. A few cases have been found in regard to the ownership of photographic plates, but even these are indefinite and uncertain in their meaning.

As regards photographic plates the courts have recognized the fact that authorship and originality of intellectual creation have the right to protection. This gives a photographer the right to have ideas, as exemplified by photography, protected by law. But this position of the courts does not import that a photographer has any title in the plates per se. His title is in the concept with some exceptions. Whatever title a photographer may have in a photographic plate depends on the contractual relation between himself and the subject of the picture. When a person sits for a photograph he does not usually vest the photographer with the right to use the plate as he may see fit. The same, broadly speaking, may also be said of a person who permits a roentgenogram to be made of his body. The idea and method of posing belongs

to the operator, and the title of the plate in the absence of a special contract, at least so far as the absolute disposition is concerned, belongs to the patient. The physician would not be prevented, probably, from using the plate for clinical purposes or lectures if the name of the patient was not disclosed, as the plate, unlike a photograph, can be recognized and understood only by experts. The layman would not know to whom the plate had reference. The courts have held that persons may enjoin the use of their photographic likeness by a photographer when such use may cause them injury.

Similarly a court might enjoin the use of a roentgenogram by a roentgenologist, who made it, or the physician for whom it was made, when the physician's agreement with the patient was that the plate was to be used for diagnostic purposes only. But if it was generally understood that the patient permitted the roentgenogram to be made for such diagnostic and other purposes as the physician may see fit, then there is for all practical purposes a vesting of title or at least user in the physician. This would not, however, give the roentgenologist title other than to the concept unless he has a special contract with the physician, as he is in no way privy to the contract between the physician and the patient. The argument that the patient is not paying for the plate but only for the benefit he may derive from that method of diagnosis would go the length only of supporting a right to possession in the person making the plate, supposing his contract with the physician, for whom the case is being diagnosed, would permit such a construction, and would not give either the roentgenologist or the physician the right to use the plate in any way either might see fit. It may be true that the patient cannot demand and obtain possession of the plate; but neither can the operator or the physician have an unlimited user. In reality, therefore, there is a joint ownership: the operator, depending on his contract with the physician, having perhaps the general right to protection for the concept; the physician who diagnosed the case having a right of possession with a limited user as per contract with the patient, and the patient having a supervisory interest in the plate.

See the following cases:

Am. Mutoscope Biograph Co. v. *Edison Mfg. Co.*, 137 F. 262.
Itzkovitch v. *Whitaker*, 39 So. 499; 115 La. 479; 1 L. R. A. 1147.
Schulman v. *Idem*, 39 So. 707; 115 La. 628.
In re *Whitaker Idem.*
Burrow-Giles Lith. Co. v. *Sarony*, Ill., U. S. 53.
Thornton v. *Schreiber*, 124 U. S. 612.
Nottager Jackson, 11 Q. B. Div. 627.

BLOOD VISCOSITY

To the Editor:—Can you give me some references to English literature on blood viscosity, especially methods of measuring viscosity? All the references that I have been able to find are from foreign journals, to which I have no access.

R. M. C., M.D., Newark, N. J.

ANSWER.—The following is a list of references to articles on blood viscosity. In the Therapeutics Department of THE JOURNAL this issue, p. 1622 there appears a discussion of this subject.

Burton-Opitz, Russell: The Viscosity of the Blood, THE JOURNAL, July 29, 1911, p. 353.
Sadikoff, V. S., and Lozinsky, A. A.: Determination of Viscosity of the Blood, *Russky Vrach*, 1914, xiii, No. 19; abstr., THE JOURNAL, Oct. 31, 1914, p. 1615.
Bucco, M.: Viscosity of the Blood and the Blood Pressure, Riforma med., March 28, 1914; abstr., THE JOURNAL, May 9, 1914, p. 1517.

Milk-Borne Typhoid Fever at Northbridge.—An epidemic of typhoid fever in Northbridge illustrates the necessity for caution in making an epidemiological diagnosis. Polluted river water was regularly introduced into the town mains for fire purposes. A history of a fire within the period of incubation of typhoid fever, plus the wide distribution of cases, pointed to water as the carrier of the infection. Yet careful analysis of the milk supply accounted for every case. Sixteen out of the twenty-two patients received milk from a dairy in which a milker and pedler was discovered ill with ambulatory typhoid, confirmed by Widal and examination of urine and stools. Even the six cases not receiving milk directly from the infected dairy had been subjected to the infection by the exchange of milk. These cases developed too soon to have been secondary infections.—*Public Health Bulletin*, Mass. State Dept. of Health, March, 1916.

Medical Education and State Boards of Registration

COMING EXAMINATIONS

DELAWARE: Dover and Wilmington, June 20-22. Sec., **Dr. H.** W. Briggs, 1026 Jackson St., Wilmington.
FLORIDA: Jacksonville, June 13-14. Sec., Dr. E. W. Warren, Palatka.
GEORGIA: Atlanta and Augusta, June 1. Sec., Dr. C. T. Nolan, Marietta.
ILLINOIS: Chicago, June 21-23. Sec., Dr. C. St. Clair Drake, Springfield.
IOWA: Iowa City, June 8-10. Sec., Dr. Guilford H. Sumner, State House, Des Moines.
KANSAS: Topeka, June 13. Sec., Dr. H. A. Dykes, Lebanon.
KENTUCKY: Louisville, June 13-15. Sec., Dr. A. T. McCormack, Bowling Green.
LOUISIANA: New Orleans, June 8-10. Sec., Dr. E. L. Leckert, 716 Maccheca Bldg., New Orleans.
MICHIGAN: Detroit, June 1-3; Ann Arbor, June 19-21. Sec., Dr. B. D. Harison, 504 Washington Arcade, Detroit.
MINNESOTA: Minneapolis, June 6-9. Sec., Dr. Thomas S. McDavitt, 814 Lowry Bldg., St. Paul.
MISSISSIPPI: Jackson, June 20-21. Sec., Dr. J. D. Gilleylen, Jackson.
MISSOURI: St. Louis, June 13-15. Sec., Dr. J. A. B. Adcock, Jefferson City.
NEBRASKA: Lincoln, June 8-9. Sec., Dr. H. B. Cummins, Seward.
NEW HAMPSHIRE: Concord, June 26-27. Sec., Dr. W. T. Crosby, The Beacon, Manchester.
NEW JERSEY: Trenton, June 20-21. Sec., Dr. Alexander MacAlister, 429 E. State St., Trenton.
NORTH CAROLINA: Raleigh, June 27-30. Sec., Dr. H. A. Royster, Raleigh.
OHIO: Columbus, June 6-9. Sec., Dr. George H. Matson, State House, Columbus.
SOUTH CAROLINA: Columbia, June 13. Sec., Dr. A. Earle Boozer, 1806 Hampton St., Columbia.
TEXAS: San Antonio, June 27-29. Sec., Dr. John S. McCelvey, Temple State Bank Bldg., Temple.
VIRGINIA: Richmond, June 20-23. Sec., Dr. J. N. Barney, Fredericksburg.
WISCONSIN: Milwaukee, June 27-29. Sec., Dr. J. M. Dodd, 220 E. 2d St., Ashland.
WYOMING: Laramie, June 14-16. Sec., Dr. H. E. McCollum, Laramie.

California December Report

Dr. Charles B. Pinkham, secretary of the Board of Medical Examiners of the State of California, reports the written examination held at Los Angeles, Dec. 13-17, 1915. The total number of subjects examined in was 9; total number of questions asked, 90; percentage required to pass, 75. The total number of candidates examined was 54, of whom 37 passed, including 20 osteopaths, 10 of whom were granted physician and surgeon's license, and 17 failed, including 13 osteopaths, of whom 9 failed to pass the physician and surgeon's examination. Thirty-four candidates were licensed through reciprocity. The following colleges were represented:

PASSED

College	Year Grad.	Per Cent.
California Eclectic Medical College	(1913) 75; (1915)	85.4
College of Phys. and Surgs., Los Angeles	(1914) 81.3; (1915)	92.2
College of Phys. and Surgs., San Francisco	(1914)	81.3
Oakland College of Medicine and Surgery	(1914)	79.4
University of California	(1914) 92.2; (1915)	88.2
Ruah Medical College	(1913) 89.7; (1915)	89.9
State University of Iowa, Coll. of Med.	(1915)	87
Tufts College Medical School	(1903)	75.1
Saginaw Valley Medical College	(1902)	82.1
Medico-Chirurgical Coll. of Phila.	(1914)	77.2
University of Pennsylvania	(1915)	86.4
Marquette University	(1915)	84.1
University of Toronto	(1902)	80.2

FAILED

College of Phys. and Surgs., Los Angeles	(1914)	71.8
Coll. of Phys. and Surgs., San Francisco	(1914)	66
Chicago College of Med. and Surg.	(1911)	38.1
Tokyo Charity Hosp. Special Med. School	(1911)	52.9

LICENSED THROUGH RECIPROCITY

College	Year Grad.	Reciprocity with
College of Phys. and Surgs., San Francisco	(1902)	Nevada
Cooper Medical College	(1903)	Nevada
Coll. Phys. and Surgs., Chicago	(1899) (1901)	Illinois
Hahnemann Med. Coll. and Hosp., Chicago	(1882) (1893)	Iowa
Northwestern University	(1898)	Illinois
Kentucky School of Medicine	(1881)	Illinois
University of Louisville (1882) Indiana	(1893)	Kentucky
Johns Hopkins University	(1899)	Illinois
Univ. of Mich. Medical School	(1888) Utah (1898)	Michigan
Minnesota College of Phys. and Surgs.	(1896)	Minnesota
American Medical College	(1898)	Illinois
Hahnemann Med. Coll. of Kansas City Univ.	(1901)	Missouri
Kansas City Medical College (1894) Nevada (1896)	(1897)	Missouri
Marion-Sims College of Med.	(1892) Missouri (1895)	Illinois
Missouri Medical College	(1881)	Illinois
St. Louis Coll. of Phys. and Surgs.	(1893)	Nebraska

University Medical College, Kansas City	(1899)	Missouri
Omaha Medical College	(1896)	Nebraska
Long Island College Hospital	(1886)	Ohio
University of the City of New York	(1894)	Mass.
Homeopathic Hospital College, Cleveland	(1894)	Kentucky
Ohio Medical University	(1898)	Ohio
University of Oregon	(1903)	Oregon
Hahnemann Medical Coll. and Hosp., Phila	(1885)	Penna.
Jefferson Medical College	(1899)	Michigan
University of Pennsylvania	(1898)	Penna.
University of Nashville	(1902)	Washington

District of Columbia January Report

Dr. Edgar P. Copeland, secretary of the Board of Medical Supervisors of the District of Columbia, reports the oral and written examination, held at Washington, Jan. 11-13, 1916. The total number of subjects examined in was 15; total number of questions asked, 80; percentage required to pass, 75. The total number of candidates examined was 13, of whom 9 passed and 4 failed. The following colleges were represented:

College	Year Grad.	Per Cent.
PASSED		
Georgetown University	(1914)	85.7; 77.5
Howard University	(1915)	79.2
Tufts College Medical School	(1910)	77.1
Cleveland College of Phys. and Surgs.	(1904)	90.2
Jefferson Medical College	(1915)	87.1
Royal Coll. of Physicians, London	(1911)	82.2; (1913) 87.9
University of Munich	(1883)	79
FAILED		
Howard University	(1914)	65.3, 72.2
Maryland Medical College	(1913)	52.9
Mebarry Medical College	(1912)	61.4

One candidate, a graduate of the University of Maryland in 1901, was licensed through reciprocity with Virginia, Feb. 6, 1916.

Michigan Reciprocity Report

Dr. B. D. Harison, secretary of the Michigan State Board of Registration in Medicine, reports that 21 candidates were licensed through reciprocity from January 7 to March 3. The following colleges were represented:

College	Year Grad.	Reciprocity with
PASSED		
Howard University	(1907)	Penna.
Bennett College of Eclectic Med. and Surg.	(1901)	Illinois
Chicago College of Medicine and Surgery	(1914)	Illinois
Rush Medical College	(1911) (1914)	Illinois
University of Illinois	(1914) (1915)	Illinois
University of Louisville	(1912)	W. Virginia
College of Phys. and Surgs., Baltimore	(1913)	W. Virginia
Johns Hopkins University	(1913)	Maryland
Detroit College of Medicine	(1910)	Illinois
Univ. of Mich. Med. School	(1889) Wisconsin (1908)	Ohio
Barnes Medical College	(1909)	Illinois
Washington University	(1907)	Missouri
University of Nebraska	(1914)	Nebraska
Miami Medical College	(1908)	Ohio
Jefferson Medical College	(1887) Pennsylvania; (1912)	Missouri
Woman's Medical College of Pa.	(1914)	Penna.
University of Toronto	(1907)	Idaho

Oregon January Report

Dr. L. H. Hamilton, secretary of the Oregon State Board of Medical Examiners, reports the written examination held at Portland, Jan. 4-6, 1916. The total number of subjects examined in was 15; total number of questions asked, 100; percentage required to pass, 75. The total number of candidates examined was 22, of whom 14 passed and 8 failed. The following colleges were represented:

College	Year Grad.	Total No. Examined
PASSED		
College of Medical Evangelists	(1914)	1
Leland Stanford Junior University	(1914)	1
College of Phys. and Surgs., Chicago	(1892)	1
University of Minnesota	(1910)	1
Western Reserve University	(1890)	1
Willamette University	(1913)	1
University of Oregon	(1910) (1915, 3)	4
Jefferson Medical College	(1910)	1
Temple University	(1909)	1
University of Virginia	(1910)	1
University of Glasgow	(1901)	1
FAILED		
State Univ. of Iowa College of Med.	(1897)	1
Hospital College of Medicine, Louisville	(1907)	1
College of Phys. and Surgs., St. Louis	(1915)	1
Albany Medical College	(1914)	1
University of Oklahoma	(1911)	1
Willamette University	(1905) (1907)	2
Tennessee Medical College	(1901)	1

Book Notices

MOSQUITO CONTROL IN PANAMA. The Eradication of Malaria and Yellow Fever in Cuba and Panama. By Joseph A. Le Prince, C.E., A.M., Chief Sanitary Inspector, Isthmian Canal Commission, 1904-1914, and A. J. Orenstein, M.D., Assistant Chief Sanitary Inspector, Isthmian Canal Commission. With an Introduction by L. O. Howard, LL.D., Entomologist and Chief, Bureau of Entomology, United States Department of Agriculture. Cloth. Price, $2.50. Pp. 335, with 100 illustrations. New York: G. P. Putnam's Sons, 1916.

The senior author, Mr. Le Prince, was the right-hand man of General Gorgas in the cleaning up of Havana; when the work on the Panama Canal was inaugurated, he was made chief sanitary inspector of the Isthmian Canal Commission. This volume records in a clear and thoroughly scientific fashion the methods adopted to free the Canal Zone from the mosquitoes responsible for the transmission of malaria and yellow fever. Many of the methods used in this work are valuable to sanitary inspectors as well as interesting to general readers. Numerous illustrations made clear the conditions under which the work was carried out and the methods of overcoming the numerous difficulties caused by the dense tropical foliage and by the constantly changing topography along the canal. The result obtained by the campaign for the control of mosquitoes is now a matter of common knowledge. But for this work the cost of the canal in human life and in money would have been far higher than was the case. In fact, it is not certain that the canal could have been built under the conditions prevailing before American occupation. It is estimated, for instance, that if yellow fever had occurred at the rate prevailing among the French company employees, the mortality from this cause alone between 1905 and 1915 would have reached a total of 14,000. Le Prince and Orenstein's book will long remain of interest to sanitarians as a vivid, first-hand record by participants in one of the greatest sanitary achievements of all time.

WHO IS INSANE? By Stephen Smith, A.M., M.D., LL.D. Cloth. Price, $1.25. Pp. 285. New York: The Macmillan Company, 1916.

Stephen Smith, a former commissioner in lunacy of the state of New York, has written quite a readable volume, mostly reminiscent of his activities as an officer. In it is reflected his knowledge of the subject as current during his term of service. In fact, the author says in the foreword: "This book is a commentary on my experiences as an official visitor of the institutions for the insane and the charities and reformatories of the state. Its intent and purpose are to illustrate with as few technicalities as possible the illusive nature of insanity, its origin in the derangement of the functions of the brain cells, the extreme impressibility of these cells and our power to increase or repress their activities. In these facts, which modern science has developed, are found the scientific principles on which the prevention of insanity, and its successful treatment, must be based. The same principles are shown to be applicable to the education of the mentally defective classes and to the reform of criminals." While this part of the introduction promises more than any author can possibly furnish in such a small book, the treatment of the subject is stimulating, and should lead to further research on this most fascinating subject.

FIRST AID IN EMERGENCIES. By Eldridge L. Eliason, A.B., M.D., Assistant Surgeon, University of Pennsylvania Hospital. Cloth. Price, $1.50 net. Pp. 204, with 106 illustrations. Philadelphia: J. B. Lippincott Company, 1915.

The strenuous times through which we are passing have made preparedness the watchword of the day, and a knowledge of first aid seems to be interesting all classes, both young and old. This little book on first aid in emergencies has appeared, therefore, at a very opportune time, and as it is written for the public in terms that can be understood by all, it ought to find a ready sale. The text is elaborate enough to meet the needs of the first-aider without attempting to make a physician of him, nor does it presume to take the place of the physician except pending the arrival of one, or when one is not to be procured.

Medicolegal

Liability of a Railroad Company for Malpractice

(Boring vs. Chicago & Erie Railroad Co. (Ind.), 110 N. E. R. 545)

The Supreme Court of Indiana reverses a judgment sustaining a demurrer interposed by the railroad company to a complaint seeking damages for the death of an employee alleged not to have been properly treated after he fell from a hand car and struck his head on one of the rails of the track, thereby suffering a rupture of a blood vessel in his head, from the effects of which he died on the following day. The court says that it is well settled that a railroad company is not liable to an injured employee for the negligence of a physician called by it to render medical or surgical aid, if it was not negligent in selecting and employing an incompetent and unskilled physician. If, however, the company knowingly selects an unskilled and incompetent surgeon, a different rule applies, for his negligence then becomes the negligence of the company and it is responsible for resulting injury. The complaint in this case charged that the injury stated caused the employee to become unconscious, and thereby rendered him unable to provide for and take care of himself in the emergency, whence it became the duty of the company to take care of and provide him with competent medical care and services; that with full knowledge of all the facts the company selected an incompetent and unskilled physician to treat him, and that by reason of the negligence of the physician he failed to recover from his injuries; that the physician permitted him to go to his shanty, in which he was living, alone and unattended, and permitted him to stay there over night and through the next day without any medical attention whatsoever; that the company well knew, or by the means of exercising reasonable care and diligence could have known, that the accident to the skull would cause a rupture of the blood vessel, and cause death by pressure on the brain, etc. The facts alleged in the complaint must be treated as admitted, as against the demurrer, and, if sustained by proof, were sufficient to warrant a finding on the part of a jury that the circumstances surrounding the injury occasioned an emergency in which it became the duty of the company to take reasonable steps to prevent an aggravation of the man's injuries through exposure or neglect. It is held, further, that the complaint sufficiently charged negligence on the part of the company, and that the trial court erred in sustaining the demurrer to it.

Validity of Rat-Proofing Ordinance to Prevent Spreading of Bubonic Plague

(City of New Orleans vs. Sanford et al. (La.), 69 So. R. 35)

The supreme court sets aside a judgment of conviction for violation of Ordinance 17, as amended by Ordinance 21, of the Board of Health of the city of New Orleans and Parish of Orleans, or the rat-proofing ordinance, adopted as a precautionary measure against bubonic plague. The ordinance was held invalid on the ground that some of its provisions were illegal and oppressive. The ordinance was assailed on the ground of its unreasonableness. It professed to be a measure for protection against rats by destroying their harboring places, while it was, in the nature of things, inoperative as against certain state and federal government buildings and structures, which were admittedly the main source of danger. This included, also, the garbage dumps, which were admittedly the common resort of rats. The city did not rat-proof these foci of infection, because there were no funds available for the work. The ordinance thus compelled the property owners to rat-proof their premises, whether or not they had the funds to do it with, while those public foci of infection, the most dangerous, were left in full operation, scattered as they were throughout the city. This was claimed to be an unreasonable exercise of the police power, especially when attended with so great expense, and in many cases at so great personal sacrifice. A police measure dictated by some evil to be remedied should be commensurate with the necessities of the occasion. Where the same feature which operates as a public menace is present in all premises alike, the police measure for correcting this feature should operate as against all premises alike, or else against none. And the public is no exception to this rule. But if, as the evidence in this case showed, this rat-proofing, coupled with rat-catching, was the only practicable mode of fighting the spread of this disease, and if, as was the case, the board of health was powerless to make this mode compulsory either against the federal, the state or the city government, what was it to do? However oppressive, however discriminating, however unreasonable this ordinance apparently might be, there was nothing else for the board of health to do, under the circumstances, than to adopt it; and hence the adoption of it was justified. But it stood to reason that the peaceful homes and business places of the inhabitants of this large city, constructed in conformity with the rules and regulations theretofore prescribed by the public authorities, could not be, overnight, by a stroke of the pen, converted into unlawful structures, so that such inhabitants, on reading their morning paper containing the promulgation of the ordinance, would be liable to a fine and to imprisonment for every day they continued to live in or own said structures. Moreover, while the board of health, or the city council, might validly clothe the health officer with the authority to ascertain and determine whether any particular building fell into the one prescribed class or the other, as, for example, the class to be concreted, or that to be merely tar-cindered, it could not invest him with authority to withdraw any particular building from the one class and place it in the other. The board of health could not delegate to a subordinate the power to create exceptions to any rule it had established, or, which was the same thing, the power to stay the operation of any rule in cases falling within the terms of its ordinances.

Restriction of Evidence to Charge of Malpractice—Giving Eggs and Toast Too Soon

(Ennis vs. Banks et ux. (Wash.), 152 Pac. R. 1037)

The Supreme Court of Washington reverses a judgment obtained by the plaintiff for alleged malpractice in the treatment of her husband during an attack of typhoid fever, which resulted in his death. The court says that Dr. Banks was charged with having negligently, carelessly and unskilfully directed, prescribed and commanded that the patient be given a diet of poached eggs and toasted bread, after which he became very sick and suffered great pain and his bowels were perforated and torn. Having charged said defendant with a specific act of negligence, the plaintiff might not under that charge introduce evidence of other acts, and attempt to show negligence therein, and have the jury instructed to find for her if they found that the defendant failed in any respect to exercise the degree of ability, skill and judgment ordinarily possessed and exercised by members of the medical profession practicing in his own and similar localities. The evidence should have been restricted to that tending to prove that the giving of a toast and egg diet was in this particular case unskilful and negligent treatment, and the jury should have been instructed to find for the plaintiff only if they so determined. While this rule would permit the plaintiff to introduce evidence of the defendant's treatment of her husband prior to the giving of the toast and egg diet, it would permit such evidence only for the purpose of showing that the diet given was improper in his condition at that time. Testimony given by the nurse as to the length of a rubber tube used in giving enemas, and by the plaintiff as to the heart action of her husband, had no bearing on the issue to be determined, and could only have been confusing to the jury, and should therefore have been excluded. The defendant urged that the trial court should have granted his motion for a nonsuit at the close of the plaintiff's case. There was evidence, however, that the toast and egg diet was, under the circumstances, an improper treatment. A physician so testified. This was evidence that the specific act alleged was negligent, and this evidence should have been submitted to the jury under proper instructions.

Society Proceedings

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New Jersey Medical Society, Spring Lake, June 20-22.
Rhode Island Medical Society, Providence, June 1.
South Dakota State Medical Association, Aberdeen, May 23-25.
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NEW YORK ACADEMY OF MEDICINE

Meeting held April 20, 1916

The President, DR. WALTER B. JAMES, in the Chair

Vitamins a New Factor in Nutrition

DR. CASIMIR FUNK: Besides the ordinary food constituents, such as proteins, fats, carbohydrates, lipoids and inorganic salts, to which the value of our food is due, a number of substances can be found in small quantities which are as indispensable to life as the former constituents. These substances I have designated "vitamins," and the diseases which arise from their lack as deficiency diseases or "avitaminoses." I am surprised that the introduction of this term has aroused animosity since it is quite customary to give a name to a substance the presence of which is merely assumed before its actual isolation, and such terms are usually accepted until further evidence disproves their presence. The evidence of the existence of the vitamins is many times stronger than in most cases in which similar terms have been introduced. There is some difficulty in fractionating and identifying substances obtained in such small quantities; the vitamins, however, are sometimes stable at higher temperatures in the presence of acids, and can be thrown down by phosphotungstic acid or analogous reagents which are so largely used for the isolation of nitrogenous substances, and afterward it can be fractionated by means of mercuric chlorid and silver nitrate and baryta. This precipitation is specific for vitamins; other precipitating agents which carry down heavy precipitates do not carry down the vitamins.

With reference to the action of the vitamins in the tissues, nothing definite is known, except that they bear a certain relation to carbohydrate metabolism. If a pigeon is fed on polished rice, it is possible to tell approximately when the symptoms of beriberi will appear when a given quantity of rice is metabolized. It is also found that the blood sugar content in avian beriberi is greatly increased. This fact has a practical bearing on infant feeding; a certain amount of vitamin can take care of only a limited amount of carbohydrate, and when starch is increased in the diet, the amount of vitamin-containing foodstuffs must be increased in proportion. A second fact has been established in connection with the metabolism in the deficiency diseases, which is that in the absence of vitamin we not only obtain a negative nitrogen balance, but the whole metabolism goes wrong; this is particularly noticed in the negative balance of inorganic constituents. The addition of vitamin puts the whole metabolism again on a normal basis. Vitamin, when properly prepared and added to a diet of polished rice, makes that diet complete. I have shown that no animal has yet been found able to live more than a short time on a vitamin-free food.

When I first expressed the opinion that pellagra was a deficiency disease, I encountered great opposition; but now the etiology of this disease as a deficiency disease seems to be established. It seems possible that pellagra is nothing but a chronic scurvy, whereas what we formerly knew as scurvy is only an acute form of the same disease. The vitamin theory as to the etiology of rickets is at present merely a working hypothesis, but the results of animal experiments suggest that we are dealing with a deficiency disease due to a deficiency of vitamins which are not essential to life, or a partial deficiency of the ordinary vitamin. The opinion of certain workers that rickets is due to a lack of calcium is very largely due to a misinterpretation of their experiments. McCollum, and Osborne and Mendel have tried to demonstrate that butter has a decided effect on the growth of rats, and have stated that butter fat does not contain nitrogen. I have succeeded in demonstrating that rats can grow very well without butter when a sufficient amount of vitamin is added to the diet of the rats, and hence I am unable to confirm the results of McCollum. When working with yeast it has been noticed that rats fed on dried yeast grew well, but showed slight symptoms of scurvy, which disappeared when autolyzed yeast was used. This possibly shows that rats require for their well-being both the beriberi and the scurvy vitamins. Successful growth was also obtained by using phosphotungstic precipitate decomposed from autolyzed yeast, while the filtrate had no action whatever. The fraction used was entirely free from material which could be extracted with lipoidal solvents, and this alone proved that the water-soluble portion of yeast is the only one responsible for the growth of the rats, in direct contradistinction to the statements of McCollum. Experiments conducted in association with Dr. Morris Stark show that McCollum's statement that casein loses, when heated with alcohol, its nutritive value is baseless. We have shown, however, that by means of a suitable diet we can make rats grow twice as fast as on a diet regarded heretofore as normal; at the same time we have been able to stunt animals on a diet which might be designated as normal. This result has been obtained in chickens fed on unpolished rice and still better by feeding unpolished rice and cod liver oil. The same may be accomplished in rats on a diet of oats. While cancer has nothing in common with the deficiency diseases, we have shown that tumors in rats and chickens do not grow so extensively on a stunting diet as on a rich diet. This makes it seem extremely probable that cancer is not of infectious origin but is due to a chemical cause.

Group Similarities of the Deficiency Diseases: A Study of Infantile Scurvy

DR. ALFRED F. HESS: There has been a difference of opinion as to whether or not the use of pasteurized milk can induce scurvy in infants. The commission on milk standards, in its report of 1912, states that pasteurization of milk does not destroy its chemical constituents. Determined to test the validity of this statement, we took a certain number of inmates of an infants' home, where all babies were fed on Grade A pasteurized milk which had been heated to 145 F. for thirty minutes, and discontinued the use of orange juice. No other change in the diet of the infants was instituted. Almost all the infants who did not receive the orange juice developed a more or less marked form of scurvy, whereas those who continued to receive the orange juice were entirely free from this disorder. The results of this investigation were questioned by some who were loath to believe that pasteurized milk could in any way lead to scurvy, and hence we extended the observation during the subsequent year. The results were the same, so that I feel safe in saying that a diet of pasteurized milk leads to the production of scurvy in infants unless some antiscorbutic food is also given. This scurvy is not, as a rule, of the florid type found in infants fed for months on a proprietary food, but may be described as latent or rudimentary scurvy. It seems probable that this insidious type of the disorder is far more common than is generally recognized by physicians. Raw milk is by no means comparable to orange juice as an antiscorbutic. It is not to be inferred from these conclusions that the use of pasteurized milk is fraught with danger, but merely that it is an incomplete diet for babies and must be supplemented by an antiscorbutic food. Secondary food factors seem also to play a part; malt preparations seemingly predispose to scurvy, and it seems probable that there is an intimate relation between the development of scurvy and the amount of carbohydrate in the dietary. In considering the clinical relationship between beriberi and infantile scurvy the current clinical view which regards infantile scurvy almost as one

of the hemorrhagic diseases, and the current pathologic view which centers its attention on the changes in bone structure are far too limited in their scope. Signs of the involvement of the nervous system are the characteristic manifestation of beriberi, and infantile scurvy is not entirely free from nervous signs. The knee jerks are frequently found exaggerated, and in some instances there is involvement of the optic disks and sensitiveness of the cutaneous nerves. These symptoms disappear when the nutrition again becomes normal. Dilatation of the right heart has been described in beriberi, and a like condition has been demonstrated in infantile scurvy. Edema is also a common symptom of the two conditions. There is evidence demonstrating essential differences in the vitamins controlling the development of these allied disorders. Observations have also been carried out as to the effect of infantile scurvy on growth. It was found that although infants continued to gain for a few weeks following the discontinuance of orange juice, they soon reached a stationary plane and for months were unable to rise above this level, but increased in weight promptly when the antiscorbutic food was again added to their diet. It is very probable that infants cease to gain during the third quarter of their first year of life for the want of this essential addition to their food, and fail to progress until mixed feeding is begun some months later. The infant is protected during the first few months of life by the store of antiscorbutic material which it has inherited from its mother, and there is a constant negative balance of these essential substances dating from the earliest beginning of artificial feeding. There is no reason why an infant should not receive orange juice when it is a month old. Observations were also made on the growth in length, as a result of which it was found that scurvy has a direct effect on such growth. There was an exception to this, however, which shows that lack of growth does not play an essential part in the constitution of this disorder.

DISCUSSION

DR. JOHN R. MURLIN: I have had the opportunity of observing pellagra in the U. S. hospital for the study of pellagra at Spartanburg, S. C. So far it has not been proved that pellagra is a result of vitamin deficiency; neither has it been proved that vitamins are essential to life. Dr. Funk has shown the specific effect which can be obtained from extract of yeast, and that added to the diet of polished rice it will cure polyneuritis in fowls; but it is a far cry from polyneuritis in fowls to pellagra. In pellagra there is a perfectly symmetrical distribution of the lesions on the skin which must be attributed to the effects on the central nervous system, but the gastro-intestinal symptoms are equally as prominent. Goldberger has shown that when normal persons are placed on a restricted diet, such as is habitual among the poor of the South, they develop symptoms of pellagra, and when an abundance of animal proteins are added to their diet, the pellagra can be cured. To prove that the absence of vitamins produces the disease, it will have to be shown that food lacks vitamins and that the proteins which prevent the disease contain vitamins. In pellagra the diet and the climate conduce to a peculiar gastro-intestinal condition. The flora of the intestines is peculiar and may give rise to acid bodies which may be toxic, but there is no justification for the belief that the lack of vitamins is the sole cause of pellagra.

DR. P. A. LEVENE: From the academic standpoint, the process of nutrition consists of two phases: One is concerned with the production of energy required for the normal course of the functions of the organism, the other with the growth and repair of the tissue elements. The first is a process of degradation, the second of synthesis. There are many substances which can be converted into tissue elements by plants or bacteria, but which cannot be made use of for the same end by man. A most perfect food is one which furnishes all the energy requirement with the least tax on the integrity of the tissues, and which at the same time contains in ready form all the elements required by the organism for the normal repair of its tissue elements. In the light of these requirements a diet composed of homologous tissues approaches nearest the ideal. On the other hand, a diet composed of an unusually large quantity of a single foodstuff is most taxing to the activities of the tissues. It not only lacks some of the elements necessary to tissue repair, but also lowers the efficiency of the supply of these substances deposited in the tissues. Such is the case in experimental polyneuritis. Fasting is much less harmful than a diet consisting of polished rice alone. A large intake of rice is more effective than a small one in producing beriberi. Beriberi once produced may be cured by a well balanced diet; it may also be cured temporarily or partially by a minute quantity of certain tissue extract. It is one of Dr. Funk's merits to have introduced the name "vitamin" for these substances. The clinician for the present has to deal cautiously with the problem of vitamins. Wherever possible he will have to avoid the one-sided monotonous diet.

DR. L. EMMETT HOLT: Scurvy has been much more frequently seen since the general introduction in this city of pasteurized milk. To my mind the evidence is conclusive that the connection is one of cause and effect. Boards of health have been properly impressed with the part that milk has played in the transmission of septic sore throat and typhoid fever, but it is unfortunate that they should have neglected to warn the public that pasteurized milk may produce scurvy. It has been asserted that if scurvy occurs in an infant it is always the fault of the milk formula and cannot be ascribed to the heating. This is a difficult position to maintain. While it is certainly true that the occurrence of scurvy shows that the food is not proper, this is far from proving that other proportions of the fat, protein and carbohydrate used would have given a different result. The addition of cereals to milk as commonly employed in infant feeding does not seem to give any protection against scurvy if the milk is heated, but rather that additions of considerable amounts of carbohydrates, particularly in the form of starchy foods and maltose mixtures, increase the liability to scurvy in heated milk. I have now under observation an infant who has developed scurvy on a diet of heated milk and high carbohydrate in spite of the fact that 1 ounce of orange juice had been given daily for a month before the first symptoms were seen. There is certainly an individual predisposition to scurvy which is of some importance. Only a small proportion of the children fed on pasteurized milk develop the condition, but the point to be emphasized is that it occurs in some infants even though fruit juice is given in the usual amounts, and that this is more likely to occur if the carbohydrates in the food are high. I do not wish to be understood as voicing an indictment of pasteurized milk, but simply to call attention to the disadvantages which must be considered as well.

DR. WARREN COLEMAN: One of the most interesting phases of the vitamin problem for clinicians is the question whether the diets used in the treatment of any of the commoner diseases are deficient in these important substances. There is no common disease of adults in this latitude which is recognized to be due to the lack of vitamins. Yet, it is not impossible that ill defined types of disorders now thought to be due to disturbance of function, or some of the symptoms of well established diseases, may have this origin. I am more ready to credit this possibility because of my experience with typhoid fever. I believe the very course of the disease has been altered by giving patients all the food they require instead of only a part of it. I no longer consider diarrhea a symptom of typhoid fever, except, perhaps, in the prodromal stage, but think it is the result of improper diet, and it ceases when the diet is arranged properly. Delirium and the typhoid state are not essential symptoms of the disease. When delirium occurs it is due to the fact that either the temperature is elevated above a certain height for a particular individual, or to the elevated temperature plus starvation. If in so well known a disease as typhoid fever such prominent symptoms could have been considered essential symptoms of the disease, it is quite possible that some of the symptoms of other diseases, or at least some disorders not now understood, may be found to be due to diets deficient in vitamins. It may be well, however, to direct attention to the fact that the so-called bland diets of the textbooks ordinarily consist of foods with a high vitamin content, unless they have been heated too long.

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DR. WARREN COLEMAN: One of the most interesting phases of the vitamin problem for clinicians is the question whether the diets used in the treatment of any of the commoner diseases are deficient in these important substances. There is no common disease of adults in this latitude which is recognized to be due to the lack of vitamins. Yet, it is not impossible that ill defined types of disorders now thought to be due to disturbance of function, or some of the symptoms of well established diseases, may have this origin. I am more ready to credit this possibility because of my experience with typhoid fever. I believe the very course of the disease has been altered by giving patients all the food they require instead of only a part of it. I no longer consider diarrhea a symptom of typhoid fever, except, perhaps, in the prodromal stage, but think it is the result of improper diet, and it ceases when the diet is arranged properly. Delirium and the typhoid state are not essential symptoms of the disease. When delirium occurs it is due to the fact that either the temperature is elevated above a certain height for a particular individual, or to the elevated temperature plus starvation. If in so well known a disease as typhoid fever such prominent symptoms could have been considered essential symptoms of the disease, it is quite possible that some of the symptoms of other diseases, or at least some disorders not now understood, may be found to be due to diets deficient in vitamins. It may be well, however, to direct attention to the fact that the so-called bland diets of the textbooks ordinarily consist of foods with a high vitamin content, unless they have been heated too long.

DR. MORRIS STARK: There is enough evidence in the literature to tempt one to assume that rickets is a metabolic deficiency. If experiments now being conducted can definitely show, and I have no doubt they will, a change in the mineral metabolism as a result of the administration of vitamin substances in themselves free from these salts in any appreciable amounts, in addition to the diet which produced the deficiency disease, the point is proved and the mystery surrounding rickets solved. Experiments have shown that boiling casein does not destroy its food value, but it does destroy the vitamins. From many authoritative sources we are led to believe that yeast contains a large proportion of vitamin. The effect of the administration of autolyzed yeast to rachitic children is a distinct increase of appetite.

DR. ABRAHAM JACOBI: Scurvy is frequent nowadays when so many babies are artificially fed. Pasteurized milk with a cereal will sometimes prevent or cure scurvy, but not every overrefined cereal will do this, only cereal in the raw state. If there is no husk left on it there is no advantage to the baby. Raw oatmeal or barley are the most efficacious materials to add to the milk. Breast-fed infants rarely have scurvy, probably because the milk from day to day and from morning to night is never the same; it has the advantage of being changed frequently.

Current Medical Literature

AMERICAN

Titles marked with an asterisk (*) are abstracted below.

American Journal of Insanity, Baltimore

April, LXXII, No. 4, pp. 591-715

1 Pathologic Findings in Sympathetic Nervous System in Psychoses. A. Myerson, Boston.
2 *Wassermann Test in Practical Psychiatry. L. G. Lowrey, Hathorne, Mass.
3 *Sensibility of Nipple Area with Reference to Mental Disease. M. E. Scheetz, Washington, D. C.
4 *Treatment of Paresis. B. D. Evans and F. H. Thorne, Morris Plains, N. J.
5 *Intracranial Injection of Salvarsanized Serum. D. M. Wardner, Cedar Grove, N. J.
6 Study of Aphasia Apropos of Case of Verbal Amnesia and Alexia. A. Gordon, Philadelphia.
7 Unique Murder Case with Application of New Law Governing Expert Testimony. J. W. Putnam, Buffalo.

2. **Wassermann Test in Practical Psychiatry.**—Statistics are presented by Lowrey dealing with the results of the Wassermann test on the blood serum of 1,600 cases admitted to Danvers State Hospital. Of 864 male cases tested, 164, or 19 per cent., were positive. Of 736 female cases, 92, or 12.5 per cent. gave positive tests. Of the 1,600 cases tested, 256, or 16 per cent., were positive. Doubtful tests occurred in 3.87 per cent. of the cases. Including cases with positive spinal fluid test and negative or doubtful blood test, 273, or 17 per cent. of 1,600 admissions, give a positive test at some point. Of 164 positive blood tests among males, 113, or 68.8 per cent., occurred in cases of nervous syphilis. Of 92 females with positive blood test, 32, or 34.8 per cent., were paretics. Of 256 cases with positive blood test, 145, or 56.7 per cent., are cases of nervous syphilis. Excluding paretics from all figures, positive tests occurred in 7.6 per cent. of 1,455 admissions. Of the nonparetic cases with positive blood, 20 are "organic," 80 are "functional" and 10 are "unclassed." It appears that, if an insane man has a positive blood test, the chances are better than even that he will be a paretic; while if a positive test appears in an insane female, the chances are that she will not be a paretic. When paresis is excluded, the chances are about three in four that the person with positive blood will have a "functional" psychosis. Among the paretics of this series, the blood test was positive in 87.5 per cent. and negative in 10.3 per cent. The spinal fluid test was positive in 87.2 per cent. and negative in 8.5 per cent., while the test was positive in both fluids in 75 per cent. of the cases. Of 276 cases with test on the spinal fluid, there are 126 positive results. Of these, 109 had blood and fluid test both positive; five had doubtful blood and positive fluid test; 12 had negative blood and positive fluid test. Of the 126 cases with positive fluid test, 121 were paretics; two imbeciles; one was organic dementia; one a heroin case; one psychoneurotic. The latter five may in the course of time develop paresis.

3. **Sensibility of Nipple Area.**—The ten cases examined by Scheetz show the following: A decrease or lack of sensitivity to light touch throughout the whole areola nipple region. The retention but inaccurate localization of pressure sensation under normal conditions. The exaggeration of pain sensations, both in the erected and in the unerected states, but more intense in the former. The increase in sensitivity for pressure and pain stimuli when an erection of the nipples was induced. The "reference of the sensations to the true sexual organs; at times by the stimulation of the unerected nipple, but in nearly every case when the erected nipple is stimulated. That diseases of the sexual organs tend to influence mental life has long been recognized, but little is known scientifically regarding the normal sexual feelings and sensations. This report aims to give for one of the accessory sexual organs a beginning of this information, without which there will persist a sharp clinical distinction between mental and physical, which does not in reality exist.

4. **Treatment of Paresis.**—In the New Jersey State Hospital at Morris Plains, Evans and Thorne have treated fifteen patients suffering from paresis with salvarsan and neosalvarsan. Fourteen of these patients were treated by the intraspinous method of Swift and Ellis and one by the intraspinous and intracranial methods combined. With the latter method two intracranial treatments were given at four weeks interval along with three intraspinous treatments. The largest number of intraspinous treatments given to one individual was ten and the smallest number three. Three of these patients showed mental and physical improvement; five showed physical improvement only; two died during the course of treatment; two died ten and thirteen months, respectively, after treatments were discontinued; the remainder showed no improvement whatever. Of the three who showed mental and physical improvement one was discharged and still remains in good physical and mental condition, having returned to work. One showed the first signs of improvement three months after receiving last treatment. The third died with convulsions ten months after treatment. The number of treatments given to each patient was insufficient to reduce the intensity of the Wassermann reaction either with the blood or the cerebrospinal fluid. The improvements observed following the treatments may be seen among the same number of paretics who have received no special treatment. The authors believe that the amount of salvarsan which can be introduced safely into the central nervous system is too small, and the intervals are too long between the treatments, to be of great value in moderately advanced cases. The intracranial method seems unnecessary. The same results can be obtained with the intraspinous method.

5. **Intracranial Injection of Salvarsanized Serum.**—Of fourteen patients treated by Wardner five improved sufficiently to be able to go back to their work and to date have remained well for from seven to eleven months. At the end of eleven months, one of these patients had a bad relapse. He was immediately brought back to the hospital and he responded immediately to additional applications of the serum. At present he is well, mentally and physically, and has parole of the grounds. Three other well developed patients have improved sufficiently to be put on parole of the grounds and are doing efficient work about the hospital. Three others have shown fairly marked physical and mental improvement but cannot as yet be trusted at large. Two have died. In both of these patients, necropsies were performed and both showed, grossly and microscopically, changes suggestive of general paresis. The immediate cause of death was in one case bronchopneumonia and in the other, who had right-sided convulsions at intervals, there was found a large cyst underlying the left motor cortex. This last case had previously shown a well marked improvement and at the time of death was on parole. Two cases have shown no improvement. Both mental and physical improvement has generally been observed after the second or third operation, and has followed

so closely on the treatment as to practically preclude the idea of coincidence. The maximum amount of improvement has occurred as a rule after six or seven treatments.

American Journal of Orthopedic Surgery, Boston

May, XIV, No. 5, pp. 259-318

8 Advantage of State Hospital for Indigent Crippled and Deformed Children in Advancement of Orthopedic Surgery in State. A. J. Gillette, St. Paul.
9 *Loose Bodies in Knee Joint; Report of Cases. M. S. Henderson, Rochester, Minn.
10 Effects of Motion and Rest in Surgical Diseases. J.-P. David, Paris.
11 *Results of Fracture of Os Calcis; Report of Cases. F. J. Cotton and F. F. Henderson, Boston.
12 Fracture of Tuberosities of Tibia; Report of Three Cases. J. W. Sever, Boston.

9. **Loose Bodies in Knee Joint.**—Cases are reported by Henderson to illustrate the various types of loose bodies to be found in joints. He says that loose bodies may have as their primary cause some condition such as osteo-arthritis or Charcot's disease, but the secondary cause is direct or indirect trauma. Osteochondritis dissecans is a group standing more or less distinctly out from the rest. The bodies seem to be produced by very slight indirect trauma. It is, however, difficult to estimate the degree of indirect trauma, and for that reason they had better be considered as due to trauma rather than to an actual disease. Trauma, direct or indirect, is essential to the production of a loose body. Henderson is convinced that surgery offers the only permanent relief, and the general condition of the patient being satisfactory, the bodies should be removed.

11. **Fracture of Os Calcis.**—Os calcis fracture of the usual compression type, Cotton and Henderson regard as being one of the most serious lesions met with, so far as future function is concerned. It is of as serious prognosis (not as to life, but as to use) as fracture of the femur at the hip. Ordinarily speaking, the man who breaks his heel bone is "done," so far as his industrial future is concerned. Late operations for correction are useful, but far from ideal in results; palliatives (plates, pads, braces and shoe modifications) are usually useless. Out of one series of sixteen cases cited only eight got even a useful result, and in one of these the displacement was so slight that one of the authors felt that no reduction was called for. Of the other seven, four recovered in spite of "conservative" treatment, but of these four, three still had trouble. The other three were cases that had been properly reduced, and in all three the result seems excellent. In four which had been "manipulated" only, the result was poor, and of these eight practically untreated only four got any kind of result. In a second series of twelve cases none had been treated, and there were no decent results at all. Out of the twelve, nine are definitely permanent cripples. Two are due to improve and may possibly work again—one probably will get back to work.

American Journal of Tropical Diseases and Preventive Medicine, New Orleans

April, III, No. 10, pp. 529-578

13 Case of Mycetoma in Hawaii; Its Etiology. M. T. Clegg and W. C. Hobdy, Honolulu.
14 Intravenous Mercuric Chlorid in One Hundred Cases of Malaria. (To be continued.) N. Barlow, St. Louis.

Arizona Medical Journal, Phoenix

April, IV, No. 4, pp. 1-17

15 Duodenal Feeding in Treatment of Gastric and Duodenal Ulcers and Some Other Conditions. J. R. Arneill, Denver.
16 Cerebral Anemia. C. S. Vivian, Humboldt.

Boston Medical and Surgical Journal

May 4, CLXXIV, No. 18, pp. 633-666

17 *Use of Duodenal Tube for Diagnosis and Treatment. (To be continued.) F. W. White, Boston.
18 Hallux Valgus. C. F. Painter, Boston.
19 Choice of Climate in Cases of Bright's Disease and Nephritis. G. Hinsdale, Hot Springs, Va.
20 *Pituitary Body and Renal Function. K. Motzfeldt, Christiania, Norway.
21 *Simple After-Treatment for Perineal Wounds. E. B. Young, Boston.
22 Exostosis of Upper Angle of Scapula. L. T. Brown, Boston.

17. **Use of Duodenal Tube for Diagnosis and Treatment.**—White regards the duodenal tube as being a real contribution to medicine, although the field for its use, both in diagnosis and treatment, is somewhat limited. He used the tube in 90 cases; fifty-six for diagnosis, in thirty-four for treatment. The tube reached the duodenum in about 30 per cent. of the cases within fifteen minutes; in about 30 per cent. more within a half hour, and in about 20 per cent. more of the cases within one to six hours. In about 20 per cent. of the patients the tube had to be left in over night in order to reach the duodenum. Some difficulties were met in adapting the routine to different sizes of patients and different sizes and shapes of stomachs. The quickest way to enter the duodenum White found is to get the tube close to the pylorus within a short time. This is best accomplished by using a light tube with a heavy tip, swallowed by the fasting patient in the erect position, feeding the tube in slowly and steadily.

20. **Pituitary Body and Renal Function.**—In one case of diabetes insipidus studied by Motzfeldt feeding the patient with the posterior lobe of the pituitary body checked the diuresis, while administration of the anterior lobe had no such effect. In a second case four posterior lobes of the pituitary body taken in the evening proved to be sufficient to diminish the output of urine to such an extent that she could sleep comfortably every night. In a third case the diuresis went down from 6,000 to 1,500 c.c., and the specific gravity increased from 1,003 to 1,007 on subcutaneous administration of pituitary extract (1 c.c. by 3).

21. **After-Treatment for Perineal Wounds.**—It is Young's aim to maintain the greatest possible degree of cleanliness and dryness as under such conditions infection and irritation are least likely to occur. After twenty-four hours, when the bleeding has ceased, the gauze perineal pad is omitted and the genitals and fissure between the buttocks kept liberally covered with a drying and antiseptic powder, the best being the compound stearate of zinc with boric acid. The powder is best applied with the patient lying on the side, the upper buttock being raised and the powder thrown into every fold. It is not sufficient to dust lightly or use a powder blower. The parts must be covered thickly, especially between the buttocks, and kept so throughout the healing if the best results are to be obtained. Although the powder gradually becomes moist, it gives excellent protection to the skin, is mildly antiseptic, and sheds water to an amazing degree. With reasonable care it is usually possible to maintain absolute dryness. If there is considerable tendency to moisture and maceration of the skin, the application of a 10 per cent. aqueous solution of ichthyol before dusting with the powder will be found effective. The patient, free from any dressing, lies on a small pad which collects any discharge from the vagina or elsewhere, and can be changed whenever necessary. The genitals are carefully washed after urination and defecation, and as often as may otherwise seem necessary.

Delaware State Medical Journal, Wilmington

January, VII, No. 2 pp. 1-10

23 Organization of National and Local Forces in Campaign Against Cancer. C. E. Lakeman, New York.

Illinois Medical Journal, Chicago

April, XXIX, No. 4, pp. 241-320

24 Every Day Factors Affecting Health and Longevity. C. J. Whalen, Chicago.
25 Treatment of Extra-Uterine Pregnancy. A. P. Heineck, Chicago.
26 Diagnosis and Treatment of Ectopic Gestation. E. E. Montgomery, Philadelphia.
27 Technic of Enucleation Thyroidectomy. P. Gronnerud, Chicago.
28 Thyroid Enlargements. S. C. Bradley, Marshall.
29 Hydrotherapy. W. G. Russell, Fortress Monroe, Va.
30 Heredity and Evolution. C. L. Redfield, Chicago.
31 Why We Need System in Physical Examinations. T. P. Foley, Chicago.
32 Hypertension. J. G. Carr, Chicago.
33 Hemolytic Icterus and Other Anemias, With Special Reference to Fragility of Red Corpuscles. D. J. Davis, Chicago.
34 Follicular Tonsillitis in Its Relation to Systemic Infections. L. E. Barnes, Chicago.
35 Preliminary Report on Graduated Exercise as Inaugurated at Cook County Tuberculosis Hospital. H. H. Bay, Oak Forest.

36 Bad Stomach and Its Interpretation. W. F. Grinstead, Cairo.
37 Removal of Two Nails From Bronchi in Child Two Years Old. R. H. Good, Chicago.

Journal of Cancer Research, Baltimore

April, I, No. 2, pp. 125-308

38 *Tumor Immunity. E. E. Tyzzer, Boston.
39 Renal Tumors in Rabbit. E. T. Bell and A. T. Henrici, Minneapolis.
40 *Tissue Cultures in Investigation of Cancer. R. A. Lambert, New York.
41 Thyroid Tumor in Sea Bass (Serranus). M. C. Marsh and P. Von Willer, Buffalo.
42 So-Called Carcinoma of Thyroid In Fish. H. R. Gaylord, Buffalo.
43 *Effects of Cancer Tissue and of Normal Epithelium on Vitality of Protozoa. G. N. Calkins, Columbia, Mo.
44 Effect of Phlorhizin on Tumors in Animals. S. R. Benedict, New York.
45 Studies on Crown Gall of Plants. Its Relation to Human Cancer. E. F. Smith, Washington, D. C.

38. **Tumor Immunity.**—Both susceptibility and nonsusceptibility, or the ability to acquire immunity, Tyzzer says, are inherited, not as a single unit factor but apparently as a complex of mendelizing factors. Nonsusceptibility and susceptibility are apparently based on factor differences, or, in other words, on unlikeness or foreignness. Nonsusceptibility may thus depend with one tumor on a difference with respect to few factors, and with another tumor on a difference with respect to many factors. In the comparison of a stock of Japanese waltzing and several stocks of common mice, the nonsusceptibility of the latter to a carcinoma, J.w.A., is based on a difference with respect to a large number—probably twelve to fourteen—of independently inherited factors. Susceptibility is in this material a dominant character, since it is manifested when its factors are present in a single representation, as in the F hybrid. The presence of a single representation of the factors of nonsusceptibility in the F hybrid apparently stimulates the growth of the tumor, for its rate of growth is more rapid than in the Japanese waltzing mouse in which the factors of susceptibility are doubly represented. There are marked differences in the behavior of various tumors on transplantation in given classes of mice. Even tumors arising in homogeneous races show such differences, and this may be attributed to the acquisition of new characteristics by the soma which are manifested in the development of the tumor. The tumor, since it breeds true with respect to these characteristics in the course of artificial propagation, may be regarded as a modification of the somatic tissue which may be termed somatic mutation.

40. **Tissue Cultures in Investigation of Cancer.**—As the result of his own studies, Lambert is inclined to endorse the view that the cancer cell is a cell of relatively low resistance and that malignancy is to be attributed entirely to the capacity of the cells for unlimited growth.

43. **Effects of Cancer Tissue on Protozoa.**—One fact stands out sharply as a result of Calkins' studies, namely, the presence of a lethal factor in cancer tissue and its absence in normal tissue. Speaking of the relationship of irritation to cancer, he says: Chronic irritation means killing of cells more or less continuously in a localized area. Localized centers of autolysis, or protoplasmic breakdown, are formed and the products are absorbed by the surrounding normal cells and by the blood. Some of these products have a stimulating effect on normal cells; these divide and the process of regeneration is started. Calkins believes that this regeneration is called forth by the stimulus of chemical products of autolyzing dead protoplasm. With chronic irritation we have the continued repetition of this process of cell death and regeneration from surrounding cells, until hyperregeneration results and a mass of cells of like kind is formed, and added to by continuation of the process. Central cells of the mass, or others cut off from blood and food supply, autolyze in situ forming centers of necrosis, and the tumor, having reached this stage, is self-perpetuating. The products of necrosis, in addition to the stimulating effect on normal vitality, also include lethal factors capable of producing the morbid symptoms in the organism as a whole, and capable also of cytolytic functions whereby cell boundaries are dissolved, thus providing the invasive power so characteristic of malignant tumors. Unless the mass of cells is enclosed by a protecting connective tissue capsule, a cancer is the result.

Journal of Cutaneous Diseases, Boston

May, XXXIV, No. 5, pp. 343-414

46 *Case of Pityriasis Lichenoides Chronica (Juliusberg). J. H. Stokes, Chicago.
47 Bones in Congenital Syphilis. A. Post, Boston.
48 Case of Gangrenous Syphilitic Gumma of Thigh. A. Ravogli, Cincinnati.
49 Use of Mercury in Verrucae Planae Juveniles. C. J. White, Boston.
50 Trichotillomania; Report of Two Cases. J. H. Blaisdell, Boston.

46. **Pityriasis Lichenoides Chronica.**—In this case Stokes found it impossible to demonstrate any interaction between emulsions of the patient's lesions and his serum, in suitably prepared guinea-pigs. It was found possible, however, to elicit in the patient himself, by intradermal injection of emulsion of his own or of psoriatic lesions, a reaction resembling a papular luetin reaction, which did not occur, on the injection of an emulsion of normal skin. Subsequent experiments, however, led the author to call in question the absolute specificity of several well known cutaneous tests. Viewed from the conventional conception of the mechanism of allergic reactions, the result obtained in the present case might be regarded as evidence of the basic identity of psoriasis and parapsoriasis. When the recently developed physical theory of the mechanism of anaphylactic phenomena is applied to the interpretation of the present result, it seems to Stokes to be reasonable to regard it simply as a local adsorption phenomenon, the result of the action of an antiferment adsorbent. The reaction thus might occur as a result of the uncovering of proteolytic enzymes in serum or tissues, or a disturbance of the normal colloid equilibrium of the body at the site of injection.

Journal of Pharmacology and Experimental Therapeutics, Baltimore

April, VIII, No. 4, pp. 175-203

51 *Peripheral Point of Attack of Strychnin. F. S. Hammett, Los Angeles.
52 Artificial Cerebral Circulation After Circulatory Isolation of Mammalian Brain. E. D. Brown, Minneapolis.
53 *Effect of Epinephrin on Medullary Centers. E. D. Brown, Minneapolis.

51. **Peripheral Point of Attack of Strychnin.**—The experiments made by Hammett showed that strychnin injected into a curarized frog does not increase the irritability of muscle tissue. In a strychninized frog previously subminimal stimuli become effective when applied to a nerve connected with its muscle. When the muscle of a strychninized frog is stimulated through its nerve the onset of fatigue is delayed and more work is accomplished. When the muscle of a strychninized frog is directly stimulated there is an initial increase in capacity for muscular work with earlier fatigue. The total work done is not changed. Therefore, Hammett concludes that the site of the peripheral action of strychnin is the receptive substance of the neuromuscular junction.

53. **Effect of Epinephrin on Medullary Centers.**—Summing up the results of his experiments, Brown says, that they tend to show that when epinephrin is perfused through the cerebral circulation, it may in a certain per cent. of cases cause a slowing of the heart and that this slowing is at least in part due to a direct stimulation of the vagus center. There is certain evidence which strongly suggests the probability that the drug also stimulates the vasomotor center. The effect on the respiratory center is very variable. There is evidence of both stimulation and depression and neither of these effects appear to be governed by the size of the dose of the drug.

Kentucky Medical Journal, Bowling Green

April XIV, No. 4, pp. 169-234

54 Perforation of Gastric and Duodenal Ulcers. I. Abell, Louisville.
55 Endometritis in Virgin. J. O. Jenkins, Newport.
56 Use of Iodin and Iodids in Medicine. E. W. Jackson, Paducah.
57 Significance of Pain in Chest. H. C. Chance, Cumberland Gap, Tenn.
58 Roentgenology. W. E. Irvin, Owensboro.

59 Chronic Hypertension. A. E. Threlkeld, Wheatley.
60 Surgery in the Country. B. Overby, LaCenter.
61 Use of Pituitary Extract in Medical and Surgical Practice. D. W. Gaddie, Hodgenville.
62 Management of Newborn. E. L. Gowdy, Campbellsville.
63 Local Anesthesia. G. Aud, Louisville.
64 Vaccines and Serums. C. F. Clayton, Balkan.
65 Skull and Brain Injuries From Surgical Point of View. C. E. Vidt, Russell.
66 Lesions of Right Iliac Fossa Other Than Appendicitis. O. W. Brown, Lenoxburg.
67 Early Symptoms of Tuberculosis. B. M. Taylor, Greensburg.
68 Normal Puerperal State. J. F. Dunn, Arlington.
69 Asthma. J. M. Hamilton, Shawnee, Tenn.
70 Appendicitis. G. W. Payne, Bardwell.
71 Colds, Their Significance and Treatment. H. T. Crouch, Bardwell.
72 Roads, Their Diseases and Treatment. T. T. Gibson, Middlesboro.
73 Injury to Intestine Followed by Volvulus. C. A. Vance, Lexington.

Maine Medical Association Journal, Portland

April, VI, No. 9, pp. 325-354

74 Intestinal Stasis. E. D. O'Neill, Biddeford.
75 Intestinal Toxemia. H. H. Roberts, Poland Spring.

Michigan State Medical Society Journal, Grand Rapids

May, XV, No. 5, pp. 219-272

76 *Scleral Trephine Operation for Detachment of Retina. Results Obtained in Twelve Patients. W. R. Parker, Detroit.
77 Puerperal Eclampsia; Its Treatment by Combining Venesection With Stroganoff's Narcosis; Report of Case. G. Kamperman and C. C. Benjamin, Detroit.
78 Obesity; Its Related Pathology. L. E. Axtell, Marinette, Wis.
79 Medical Teaching in Detroit at Present and in Future. J. W. Vaughan, Detroit.
80 Therapeutic Indications in Appendicitis. H. B. Knapp, Ionia.
81 Aseptic Technic Method in Management of Contagious Hospital. D. M. Cowie, Ann Arbor.
82 Case of Dibothriocephalus Anemia. H. B. Schmidt, Ann Arbor.
83 Puerperal Inversion of Uterus; Report of Case. R. A. Bartholomew, Ann Arbor.
84 Lantern Slide Review of Month's Roentgenograms. J. G. Van Zwaluwenburg, Ann Arbor.

76. Abstracted in THE JOURNAL, Sept. 25, 1915, p. 1136.

Military Surgeon, Washington

April, XXXVIII, No. 4, pp. 377-483

85 Coordination of Medical Departments of Army and Navy in Campaign. H. P. Birmingham, U. S. Army.
86 Army and Navy Medical Departments in Joint Campaign. D. N. Carpenter, U. S. Navy.
87 Lot of Innocent Bystander in War. T. W. Jackson.
88 Deficiency of Sanitary Units of Organized Militia. L. T. Hess, U. S. Army.
89 Organization and Problems of War Hospital. J. M. Flint.
90 Practical Utilization of Vital Statistics in Prevention of Disease and Control of Epidemics. J. W. Trask, U. S. P. H. S.
91 Proposed Equipment for Hospital Corps Soldier. R. B. Miller, U. S. Army.

Missouri State Medical Association Journal, St. Louis

May, XIII, No. 5, pp. 197-250

92 *Sodium Citrate Transfusion for Hemorrhage; Report of Cases. L. H. Hempelmann, St. Louis.
93 Management of Gonorrheal Urethritis. M. Goldman, Kansaa City.
94 Choice of Operation in Various Classes of Cases of Retrodisplacement of Uterus. (To be continued.) H. S. Crossen, St. Louis.
95 Cases of Brain Surgery in Country Physician's Practice. E. E. Liggett, Oswego, Kan.
96 *Treatment of Ozena and Asthma With Autogenous Vaccines; Report of Cases. C. L. Klenk, St. Louis.
97 Essential Hemorrhage of Uterus; Report of Case. C. H. Wallace, St. Joseph.
98 Pneumonia of Childhood. A. C. Ames, Mountain Grove.
99 Responsibility of Surgeon. W. A. Duringer, Fort Worth, Tex.
100 Unusual Cardiogram in Case of Mitral Stenosis and Insufficiency. W. E. Muns, Columbia.
101 Relation of Rectum to Female Pelvic Organs. W. H. Stauffer, St. Louis.

92. **Sodium Citrate Transfusion for Hemorrhage.**—The first patient whose case is cited by Hempelmann had been bleeding from the bowels for seven days and seemed to be in a dying condition. The physicians in attendance had used morphin, horse serum, saline solutions and all the things usually employed to check hemorrhage, but without success. A citrate transfusion of 250 c.c. was carried out; the bleeding ceased and the man made an uninterrupted recovery. The second patient was a man whose septum had been removed. He had been given calcium forty-eight hours prior to the operation. Eight hours after the operation the patient vomited a large quantity of blood and the nose was repacked. However, in spite of this and of morphin, saline solution, horse serum, etc., the oozing continued uninterruptedly for nineteen hours after the first vomiting of blood. The patient was almost exsanguinated by this time, 320 c.c. of citrated blood was injected. The patient improved immediately and made an uninterrupted recovery. In each case the transfusion was followed by slight fever which lasted only a short time.

96. **Asthma and Ozena Treated with Autogenous Vaccines.**—After numerous experiments with rabbits Klenk concluded that the coccobacillus of Perez was the true cause of ozena. In nearly all cases treated he used vaccines composed of a pure culture of the coccobacillus isolated from the patient's nose. The vaccines are usually prepared from the semiliquid portions of the greenish, stinky crusts. At least ten to twelve cultures are made on albuminized agar contained in large wide tubes. In several instances absolutely pure cultures were obtained with the somewhat modified typical odor of the original condition. If the patient's serum from which the organism has been isolated agglutinates the bacteria obtained from the rabbit in a dilution of at least 1 to 30 the findings are positive and the organism is used in preparation of the vaccine. The results thus far are very gratifying. Klenk is certain that after a time with improved technic most cases of ozena will be markedly improved and ultimately cured. Many of the patients who have been under treatment, with the exception of the atrophy, appear cured. Some of the patients who are not doing well did not give positive agglutination tests and in others he was not able to isolate the coccobacillus. The autogenous vaccine for the treatment of asthma is at present in the experimental stage. Klenk has not had the opportunity to try the vaccines on more than twelve or fifteen patients but the results obtained are very gratifying. He has not been able, nor has he attempted, to isolate a specific organism in the preparation of the vaccine, but he uses all pathogenic bacteria found in the material submitted.

Modern Hospital, St. Louis

April, VI, No. 4, pp. 235-310

102 Analyses and Evaluation of Proprietary Infant Foods. J. P. Street, New Haven, Conn.
103 Municipal Tuberculosis Hospital of Kansas City. E. P. Madorie, Kansas City, Mo.
104 Intern Question — Where Lies Trouble? A. B. Tipping, New Orleans.
105 Laundry in Thousand Bed Hospital. C. B. Bacon, New York.
106 Application of Principles of Organization to Hospital Service. R. G. Valentine, Boston.

New Mexico Medical Journal, Las Cruces

April, XVI, No. 1, pp. 1-26

107 Strabismus or Squint. S. C. Clarke, Albuquerque.
108 Rational Treatment of Snake Bite. E. L. Ward, Santa Fe.
109 Indications and Counterindications for Chloroform and Ether. W. W. Phillips, Roswell.

New Orleans Medical and Surgical Journal

April, LXVIII, No. 10, pp. 629-691

110 History of Two Uncinaria Patients Treated With Thymol at U. S. Marine Hospital, Wilmington, N. C. F. Grave and H. M. Slater, Wilmington, N. C.
111 Epidemic of La Grippe. C. S. Holbrook and W. B. Terhune, Jackson.
112 Two Cases of Trachoma in Native Born Louisianians. T. J. Dimitry, New Orleans.
113 Case of Bilateral Colonic Pyelitis. H. W. E. Walther, New Orleans.
114 Case of Syphilis, With Secondary Involvement of Heart and Kidneys. A. Eustis, New Orleans.
115 Dislocation of Temporomaxillary Interarticular Fibrocartilage. J. T. O'Ferrall, New Orleans.
116 Operative Treatment of Cranial Injuries. C. W. Allen, New Orleans.

New York Medical Journal

May 6, CIII, No. 19, pp. 865-912

117 Treatment of Cardiac Syphilis. J. M. Anders, Philadelphia.
118 Seven Glass Urinary Test. V. C. Pedersen, New York.
119 Can Errors in Diagnosis and Indication be Minimized by Cooperative Method? C. Beck, Chicago.

120 Case of Pulsating Exophthalmos. F. Krause, Philadelphia.
121 Technic of Secondary Nephrectomy. E. Gauraz, Mennecy, France.
122 Compensation and Insurance in Eye Injuries. C. B. Meding, New York.
123 Cases of Reflex Irritation of Urinary Bladder. J. N. Upshur, Richmond, Va.
124 Diathermia in Tuberculosis. A. C. Geyser, New York.
125 Source of Pains in Head. A. D. Mittendorf, New York.
126 Id. J. L. Courrier, Newark, N. J.

Ophthalmology, Seattle

April, XII, No. 3, pp. 437-592

127 Mirror Writing. S. H. Brown, Philadelphia.
128 Relation Between Surgical Operations on Eyeball and Pyorrhea Alveolaris. L. W. Fox, Haverford, Pa.
129 New Method of Dressing Eyes After Cataract Extraction. F. P. Maynard, Calcutta.
130 Gas-Oxygen Analgesia in Eye, Ear, Nose and Throat Surgery. W. Walter, Chicago.
131 Multiple Wounds of Eye Due to Broken Spectacle Lens. A. Murray, Chicago.
132 Eye Injuries and Treatment in Present War. S. Walker, Jr., Chicago.
133 Retained Foreign Bodies in Orbit. F. W. Miller, Los Angeles.
134 Massage in Glaucoma. A. A. Bradburne, Manchester.
135 State Legislation Concerning Trachoma. F. Allport, Chicago.
136 Pulsating Exophthalmos Treated by Slow Occlusion of Common Carotid Artery With Neff Clamp. S. D. Brazeau, Spokane, Wash.

Pennsylvania Medical Journal, Athens

April, XIX, No. 7, pp. 483-580

137 Morbidity of Acute Appendicitis. G. P. Muller, Philadelphia.
138 Involvement of Pectoral Muscle in Cancer of Breast; Report of Examination of One Hundred Specimens. J. Speese, Philadelphia.
139 *Free Transplantation of Fascia Lata in Treatment of Inguinal Hernia. F. T. Stewart, Philadelphia.
140 Pancreas and High Intestinal Obstruction. J. E. Sweet, Philadelphia.
141 Case of Palsy of External Rectus Muscle With Operation. C. M. Harris, Johnstown.
142 *Treatment of Tuberculous Peritonitis; Medical vs. Surgical. T. J. Elterich, Pittsburgh.
143 *Tertiary Manifestations of Syphilis as Seen in General Medical Ward. J. H. Musser, Jr., Philadelphia.
144 *Chronic Arthritis. T. McCrae, Philadelphia.
145 Case of Scurvy With Amebae Found in Cums. T. M. Tyson and H. D. Jump, Philadelphia.
146 *Report of New Method of Treating Gonococcic Purulent Conjunctivitis by Exclusive Use of Iced Normal Salt Solution. E. B. Heckel, Pittsburgh.

139. Abstracted in THE JOURNAL, Oct. 23, 1915, p. 1483.

142. Abstracted in THE JOURNAL, Oct. 30, 1915, p. 1578.

143. Abstracted in THE JOURNAL, Oct. 9, 1915, p. 1304.

144. **Chronic Arthritis.**—On the basis that chronic arthritis may be of infectious origin, McCrae, says, one should give up the habit of calling such conditions "rheumatism." This only means a hazy conception in the minds of most of us and we need clear ideas and definite conceptions in dealing with chronic arthritis, which has nothing to do with rheumatic fever, a definite infectious disease readily recognized in the majority of cases. If there is doubt in the diagnosis of an acute arthritis, as there may be for some days, it is wiser to feel that other forms of arthritis have to be excluded and it is better to make the diagnosis of rheumatic fever last rather than first. The occurrence of permanent changes in or about a joint, even though very slight, speaks against rheumatic fever. The finding of the original focus of infection is more essential. It is not well to think that this is an easy matter; sometimes it is, but more often the search is difficult. In general, the measures to be adopted are: (1) early recognition before material damage is done so that the proper measures can be adopted at the onset; (2) thorough search for the focus of infection and efficient treatment of this if found; (3) every effort to improve the patient's powers of resistance, and this is particularly important if the source of infection cannot be found, in the hope that the patient may overcome the infection by his own powers of resistance. This involves the best possible nutrition, good hygiene, free elimination and the blood in good condition; (4) the effort to lessen the damage to the joints, under which head come the proper uses of exercise and rest; local measures, such as aid the circulation or relieve pain; (5) the relief of pain both for the sake of the patient and to allow of movements in some cases; (6) the prevention of deformities.

146. **Gonococcic Purulent Conjunctivitis Treated by Iced Normal Salt Solution.**—The temperature which can be maintained with cold is almost 0 C., under which the gonococci are killed instantly. On this assumption and the assumption that gonococci are found only in superficial epithelial tissues and do not penetrate deeply, Heckel says, that we have in iced normal salt solution a harmless effective germicide, easily produced, maintained and easily applied. He cites two cases in which its use was followed by excellent results.

South Carolina Medical Association Journal, Greenville

April, XII, No. 4, pp. 95-126

147 Medical Preparedness in South Carolina. G. A. Neuffer, Abbeville.
148 Ignorance, Superstition, Quackery. R. B. Furman, Sumter.
149 Preparation of Patient for Surgical Operation. F. L. Potts, Spartanburg.
150 Care and Treatment of Patients at State Hospital for Insane, Columbia, S. C. C. F. Williams, Columbia.

Southwest Journal of Medicine and Surgery, El Reno, Okla.

April, XXIV, No. 4, pp. 101-128

151 Food Poisoning and Its Relation to Cold Storage; Its Medicolegal Importance. T. W. Schaeffer, Kansas City, Mo.
152 Early Recognition of Some Serious Affections of Eye. G. A. Landes, Parsons, Kan.
153 What Patients Swallow. S. H. Landrum, Altus.
154 Tracheobronchoscopy and Esophagoscopy; Report of Cases. D. L. Shumate, Kansas City, Mo.

FOREIGN

Titles marked with an asterisk (*) are abstracted below. Single case reports and trials of new drugs are usually omitted.

British Medical Journal, London

April 15, II, No. 2885, pp. 541-576

1 Colds and Influence of Atmosphere on Nasal Mucous Membrane. L. Hill.
2 Soldier's Heart and Its Relation to Thyroidism. J. Barr.
3 Penetrating Wounds of Abdomen; Report of Cases. H. H. Sampson.
4 Two Cases of Removal of Bullet from Upper Surface of Diaphragm. E. D. Telford.
5 Value of Time in Surgery. R. P. Rowlands.
6 *Nature and Treatment of Concussion. T. E. Harwood.
7 Three Cases of Paroxysmal Hemoglobinuria in Soldiers. D. MacManus.
8 Case of Heart Block in Jaundice. R. D. Rudolf.

6. **Nature and Treatment of Concussion.**—Harwood believes that there is some relationship between errors of refraction and concussion in its expression of a neurasthenia. A patient suffering from head injury or shell shock is usually put to bed and rested in every possible way; almost the only organs of his body on which any constant voluntary effort falls are his eyes. In fact, throughout his convalescence his chief energies are, consciously or unconsciously, being spent on his eyes, because without the use of his eyes he can do little or nothing, and during all his waking moments a large proportion of his diminished available energy is being spent on them, the result being that the rest of his body is starved. Various functional effects follow, and the patient falls a ready victim to organisms normal to the body and their toxins. But by correcting the refractive error the work which the eyes have to do can be reduced to a minimum.

Dublin Journal of Medical Science

April, CXLI, No. 532, pp. 227-294

9 Fat Supply of Germany. A. D. Waller.
10 Therapeutics of Distilled Water. G. A. Stephens.

Edinburgh Medical Journal

April, XVI, No. 4, pp. 257-336

11 *Nonprotein Nitrogen of Blood, Especially in Its Relation to Nephritis and Renal Function. F. D. Boyd.
12 Case of Enteric Intussusception. J. Fraser.
13 Cases of Perforating Pyloric and Duodenal Ulcers. W. A. Mackay and I. Macdonald.
14 Flash Boiler as Field Equipment. W. Robertson.
15 Royal College of Surgeons of Edinburgh. C. H. Creswell.

11. **Nonprotein Nitrogen of Blood.**—Boyd is convinced that nitrogen retention does not occur in all nephritics. He says that when the nonprotein nitrogen of the blood rises to 50 mg. per cent. it is a distinct warning of grave renal inadequacy, and is an urgent call for a rigid nonnitrogenous regimen. Nitrogen values round about or over 100 mg. per cent. justify the gravest prognosis, but there is no definite relationship between nitrogenous retention and high blood pressure. The estimation of nonprotein nitrogen of the blood is of great clinical value as a guide to prognosis and to treatment in all cases of nephritis. The treatment of nitrogen retention must be principally dietetic. When a nephritic with nitrogen retention comes under observation it is well, if strength permits, to withdraw all nourishment, satisfy thirst with distilled water, and administer purgatives. Considerable nitrogenous waste can be withdrawn by the bowel. Hot-air baths or hot packs are of value. After a period of twenty-four hours' rest nonprotein diet is commenced, consisting of water arrowroot, cream, sugar and such stewed fruits as are poor in benzoic acid, namely, apples, prunes and figs. This diet can be kept up for a week or even two weeks without the patient suffering. It supplies sufficient energy for the bodily requirements, and if nitrogen retention is not excessive may cause a definite fall in blood nitrogen. At the end of the period milk may be added and more inspiring farinaceous foods than water arrowroot. In the early stages of an acute nephritis, even when there is no nitrogen retention, such a diet is always desirable, for even though the kidney may be able to excrete waste nitrogenous bodies, in doing so it is working, not resting, and work is not good for an organ in an active state of inflammation. In chronic nephritis dietetic treatment must largely be governed by an estimation of blood nitrogen. If there be no nitrogen retention it is inadvisable to keep the patient on a strict nonprotein diet, as nutrition suffers. Short periods of nitrogen-free diet are often useful and beneficial to the renal function and the cardiovascular symptoms, but the patient's nutrition must always be kept in view.

Journal of Tropical Medicine and Hygiene, London

April 1, XIX, No. 7, pp. 77-88

16 *Vaccine Treatment in Streptococcal Puerperal Fever. A. J. Chalmers and O'Farrell.
17 Blastomycosis (?) in Central Africa. A. Y. Massey.

16. **Vaccine Treatment in Streptococcal Puerperal Fever.**—Chalmers and O'Farrell cite two cases of puerperal fever caused by the fecalis group of streptococci in which vaccine therapy was successful. The first patient, a multipara, had an easy confinement which was conducted without intravaginal examination. She kept quite well for seven days, when for the first time she received an intravaginal douche, after which the fever began. No organisms were obtained from the peripheral blood, but an intra-uterine swab produced a pure growth of a streptococcus, which eventually proved to be *Streptococcus versatilis*, belonging to the fecalis group. She at first only received antistreptococcal serum, but on admission into the hospital the uterus was thoroughly cleansed. An autogenous vaccine was given in a 5 million dose six days after the preliminary dose of *Streptococcus salivarius* (stock vaccine). This vaccine also appeared to do no good, and five days later the patient became obviously worse, when 200 millions of the fecalis group vaccine was administered. She made a good and rapid recovery. This is obviously a chronic case in which the treatment of uterine cleansing and antistreptococcal serum did much good, while the heterologous vaccine did no good, but a large dose of the homologous vaccine produced a cure.

The second case was a very severe type of fever which had lasted six days, and when first seen had a temperature of 104.6 F. There was much purulent discharge from the uterus. The uterus was douched out with antiseptics, but this had to be stopped on the third day as the patient's friends refused to allow it to be done, and she had to trust entirely to vaccine therapy. As some human fecal matter had been observed in the vagina, it was decided to treat her at once with the same vaccine as that made from the first case, and this was done in less than twenty-four hours after the case had been first seen. She received a 5 million dose, and, as the effect was to slightly lower the temperature, and as the patient showed some improvement, three days later she received 50 millions, when the temperature gradually fell, reaching 100 F. on the sixth day after the first vaccine dose. On the next day it rose to 102.6 F. in the evening, and next day (eighth day after first injection), she received 200 millions, the temperature declined and reached normal on the third day after this dose, and the eleventh after the commencement of vaccine therapy, she made a good recovery.

Lancet, London

April 15, II, No. 4833, pp. 809-848

18 Acute Poliomyelitis. F. E. Batten.
19 *Importance of Auscultation in Diagnosis of Vascular Injuries Accompanying Gunshot Wounds. G. Makins.
20 Shock and Soldier. (To be continued.) G. E. Smith.
21 Standard Method of Testing Antiseptics for Wounds, with Some Results. W. d'E. Emery.
22 Treatment of Hemorrhoids by Injection of Two Per Cent. Phenol. F. S. Edwards.
23 Methods of Preparing Sphagnum Moss as Surgical Dressing. C. W. Cathcart.
24 *Precipitin Reaction in Tuberculous Fluids. S. R. Gloyne.
25 Imperforate Hymen in Baby. H. R. Spencer.
26 Case of Imperforate Hymen. W. Robertson.

19. **Auscultation and Gunshot Wounds.**—Well recognized and charactertistic as are the murmurs produced by the existence of traumatic openings in the walls of the blood vessels, Makins is of the opinion that the routine employment of the stethoscope for their detection seems hardly so generally adopted as should be the case. The importance of this method of examination is obvious in any class of wound, but it is especially valuable in the case of the multiple wounds inflicted by the various forms of fragments derived from the bursting of high explosive shells and bombs. Three cases are cited to emphasize the value of this method of physical examination and to impress the fact that in any case of swelling of a limb in connection with a gunshot wound the stethoscope affords a ready and certain means of establishing a diagnosis. Further, observation of the point at which the bruit is loudest and highest pitched will serve to localize the exact position of the lesion. Makins points out that the method is far more reliable than the uncertain practice of examining for the state of the distal pulse, for this is obliterated only if the vessel has been completely severed, or in the rarer instances in which large masses of hard clot exist to compress it, while diminution of size and force is more likely to be due to moderate pressure from without than to the existence of a lateral wound in the wall of the artery.

24. **Precipitin Reaction in Tuberculous Fluids.**—Four definitely tuberculous fluids were tested (three contained bacilli, and the fourth, though no bacilli were found, was verified postmortem) by Gloyne. Of these four fluids three gave positive reactions (75 per cent.). Fourteen fluids were also tested in which the diagnosis could not be definitely proved by the finding of bacilli, but in which a lymphocyte count, high protein content, etc., strongly suggested a tuberculous origin. Of these, five (36 per cent.) gave a positive reaction, two (14 per cent.) a doubtful and seven (50 per cent.) a negative result. Four nontuberculous fluids used as controls were all negative. Gloyne is of the opinion that the test may be of some use in cases of tuberculous effusion in which bacilli have not been found in the fluid.

Practitioner, London

April, XCVI, No. 4, pp. 347-446

27 Clinical Electrocardiography: A Résumé. S. R. Wells.
28 Common Aids. Venesection; Purgation; Massage; Blistering, etc. L. Williams.
29 Genito-Urinary Surgery: A Review. J. W. T. Walker.
30 Hexamin: Its Use and Misuse. A. S. Erulkar.
31 Citrated Whole Milk Feeding for Infants. C. W. Vining.
32 Children's Diseases: A Review. H. Thursfield.
33 Retrospect of Otology, 1915. M. Yearsley.
34 Treatment of Rheumatic, Neuralgic and Allied Pains by Ionization with Sodium Salicylate. C. W. Budden.
35 *Rôle of Pyorrhea Alveolaris in Causation of Chronic Bronchitis and Asthma. S. P. Shivdas.
36 Syphilis and Yaws in Tropics. S. Vassallo.

35. **Pyorrhea Alveolaris in Causation of Bronchitis and Asthma.**—Cases are cited by Shivdas to show that pyorrhea alveolaris is a most potent etiologic factor in the causation of these diseases. In the cases in which the pyorrhea alone was treated, either a marked improvement or disappearance of the lung affection was observed, with the arrest or improvement of the pyorrhea. When the lung affections alone were treated without any attention to the pyorrhea, hardly any good results were obtained, except a slight temporary relief in the symptoms in consequence of the administration of soothing and anodyne remedies. When both the pyorrhea and the lung affections were treated, the asthma or chronic bronchitis either disappeared or showed improvement, with arrest or improvement of the pyorrhea.

Bulletin de l'Académie de Médecine, Paris

April 4, LXXV, No. 14, pp. 373-395

37 *Magnet for Extracting Projectiles in the Brain. L. Rocher.
38 Local Anesthesia for Prostatectomy. F. Legueu.
39 *Prophylaxis of Scarlet Fever by Milne's Method. G.-H. Lemoine and Devin.
40 Abscess in the Liver with Trench Diarrhea. F. Rathery and L. Bisch.
41 Amebic Dysentery in France. (Sur la dysenterie amibienne autochtone.) A. Orticoni and P. Ameuille.
42 Surgical Treatment of Pseudarthrosis After Fracture of Lower Jaw. (Traitement chirurgical des pseudarthroses dans les fractures du maxillaire inférieur.) Cavalié.

37. **The Giant Magnet as Aid in Extracting Scraps of Metal from the Brain.**—Rocher shows by illustrations how the magnet causes waves in the brain tissue which help to mobilize the bullet or scrap of shell. The attraction should always be applied so as to draw the bullet out by the path it entered. He has made a special study of the subject on cadavers, and points out the dangers to be avoided. When the foreign body is in quite deep, he interposes a narrow steel funnel, 5 cm. long, fitting over the tip of the magnet. It is important to draw the bullet out by its tip, and under control with the Roentgen rays it is possible to guide and draw the tip around to the best position for its extraction from the tissues.

39. **Prophylaxis of Scarlet Fever, Diphtheria, etc., in Hospital.**—Lemoine and Devin relate that last January a large number of cases of scarlet fever, diphtheria, measles and mumps were brought to the improvised hospital in their charge, and there was only one large hall where the men could be placed. They had a few low partitions put up to mark off the sick with the different diseases, but isolation was out of the question. The sole reliance was on the Milne method of prophylaxis, veiling head and chest with a gauze curtain which was sprayed with tincture of eucalyptus and an antiseptic three times a day. Every three hours the throat and nasopharynx were painted with iodized glycerin and an antiseptic oil was instilled into the nasal passages. These measures were done by the physician himself or by a nurse tending exclusively one group of patients. When the man was allowed to get up, he had to stay in part of the room given up to suspects, and three times a day, the throat, nasopharynx and the nose were disinfected. During the month this treatment was applied to 10 men with measles, 18 with scarlet fever, 16 with mumps, and 12 with diphtheria, and no case of contagion and no complications developed. The method must be applied painstakingly by one who believes in it and it takes patience and perseverance. When this can be realized, the period of isolation after infectious disease can be materially shortened.

Progrès Médical, Paris

January 5, XXXII, No. 1, pp. 1-8

43 Spontaneous Fracture of Bones in Foot in Tabes. (Les fractures spontanées des os du pied dans le tabès.) C. Roubier.
44 Correction of Cicatricial and Other Constriction of the Jaws. (Constriction des machoires.) G. Pitsch.
45 The Evolution of Military Surgery. P. Bonnette.

January 20, No. 2, pp. 9-16

46 Tuberculous Perinephritis. M. Loeper.
47 Technic for Intravenous Injections. H. Gallais.

February 5, No. 3, pp. 17-24

48 Transient Malignant Edema of the Eyelid. (Pustule maligne des paupières à guérison rapide.) M. Loeper and J. Carlotti.
49 Chaulmoogra Oil in Intravenous Treatment of Leprosy. M. Vahram.
50 *Tests to Control the Hearing Capacity. (Contribution à l'étude expérimentale du controle auditif.) H. Gosset.
51 Balsam of Peru Specific Against Pyocyaneus Infection of Wounds. (Le pansement des plaies.) H. Bourgeois.
52 *Sodium Perborate in Treatment of Wounds. (Le perborate de soude dans le pansement des plaies.) H. Bourgeois.

February 20, No. 4, pp. 25-32

53 *Operation on Hydrocele by the Inguinal Route. (La cure radicale de l'hydrocèle vaginale par la voie inguinale. J. P. Tourneux.
54 *Differential Diagnosis of Syphilis of the Mouth. (Syphilis de la bouche. Gommes perforantes du voile du palais.) Gaucher.

50. **Tests to Control the Hearing.**—Gosset mentions a number of means with which simulation or exaggeration of deafness is readily detected during lip reading exercises.

52. **Sodium Perborate in Treatment of Wounds.**—Bourgeois applies the sodium perborate as a dry powder. As it becomes moistened by the secretions it generates oxygen and acts like the ordinary solution of hydrogen dioxid, only that it is alkaline. He fills up the wound cavity with the powder, without draining, with a flat dressing above, renewed every day at first.

53. **Operative Treatment of Hydrocele by the Inguinal Route.**—Tourneux comments on the disadvantages and complications liable to follow an operation on the scrotum to cure hydrocele, especially the difficulty of ensuring and maintaining asepsis in this region. There is often a tendency to inguinal hernia, also, in men with hydrocele, especially the congenital. There are thus a number of advantages in operating on the hydrocele through an inguinal incision, as Gomoiu and Phocas have been doing with great success. They had published by 1914 sixty-eight cases with unfailingly excellent results. It is very easy to draw up the testicle through an incision in the inguinal or inguinal-pubic region, an assistant pushing it up from below. The tunica vaginalis soon presents in the incision and is seized with two forceps and evacuated. Then the testicle is drawn out and the serosa is turned as by the usual technic, resecting it or not as indicated. Phocas punctures and evacuates the hydrocele as the first step, but Tourneux does not think this is necessary but rather a drawback as it is easier to find and hold the vaginalis when it is distended. He has been much impressed with the ease, simplicity and ideal results of this method of treating hydrocele. It takes only a few minutes and the incision heals promptly as held together with clips. The reaction inside the scrotum is much less than with the scrotum incision; the patient is kept in bed but a few days—Phocas says only two or three—and he can leave the room in seven or eight. Tourneux thinks that this principle of access through the inguinal region could be applied to a number of other affections of the testicle and cord.

54. **Syphilis of the Mouth.**—Gaucher expatiates on the necessity for bearing the possibility of syphilis in mind whenever a sore throat shows a median predominance of the lesions, or when a syphilitic complains of sore throat. Ordinary sore throat usually concentrates on the tonsils and their vicinity. When the finger feels a deep hardness in the velum you are justified in asking as you palpate the palate "When did you get your syphilis?" Tuberculous ulceration of the velum is rare and is more painful than the syphilitic, and is surrounded by yellow points, the miliary tubercles. Syphilitic lesions of the tonsils are rare, but there is a febrile type, a type that resembles epithelioma, and a gangrenous type usually from secondary infection. The limitation to one side and the absence of glandular involvement help in differentiation. Gaucher adds that as potassium iodid is said to promote epithelioma, it is better not to give it in dubious cases; mercury is always available. A solitary gumma in the pharynx is liable to be mistaken for an ordinary tumor. Diffuse syphilitic lesions of the palate and pharynx have such an insidious onset that irreparable damage may have been done before their presence is suspected. Any change to a more nasal tone to the voice is suspicious, and redness or other sign of anything wrong in the mouth or throat of a syphilitic calls at once for careful palpation throughout.

Monatsschrift für Kinderheilkunde, Berlin

XIII, No. 11, pp. 477-516

55 *Epidemiologic Study of Measles. (Masernfragen.) H. Wagener.
56 *Extractives in Infant Feeding. (Bedeutung der Extraktivstoffe für die Ernährung.) P. Heim.
57 *Intussusception in Infants. (Darminvaginationen im Kindes- und Säuglingsalter.) M. Nagel.
58 *Anemia and Enlargement of the Spleen in Girl of Nine. (Hochgradige Anämie mit Milztumor—Pseudo-Banti—beim älteren Kinde als Folgeerscheinung septischer Infektion in den ersten Lebenswochen.) H. Kleinschmidt.
59 *Is There an Initial Fever in Tuberculosis? (Zur Frage des Tuberkulose-Initialfiebers.) H. Kleinschmidt.

55. **Measles Problems.**—Wagener studied some epidemics of measles in five different towns during 1913 but was unable to find anything to confirm the assumption that measles can be transmitted by inanimate objects or by healthy persons. A schoolroom of children becomes infected by one or more of the children having been exposed outside the school. Each infects those in its immediate vicinity alone, and these in turn others, until all in the room have been infected by the end of three weeks. This phase is followed by the period in which the children at home, too young to go to school, and the adults become infected. This sequence of events can be clearly traced in places with a one room schoolhouse. An epidemic develops only after an interval of at least three years since the last general epidemic of measles. Those who escape a general epidemic are the children under 5 months old at the time. All who escape are thus below the school age, as all the schoolchildren who have not already had measles contract it without exception during a village epidemic. The epidemic reaches its height in twenty-five or six days and then declines, the younger children and adults' infection representing the declining period. Among the 694 cases of measles in the five different localities, complications were observed in 27.26 per cent., including 77 cases of otitis media, 54 of conjunctivitis, bronchitis in 18 and pneumonia in 9, while 27 children were left with chronic enlargement of lymph glands, 15 with severe anemia, and 12 with chronic disease of the middle ear. He found no instance of primary immunity. The exanthem showed invariably in the throat when the children were examined during the days just preceding the skin eruption; in one case it appeared before Koplik's spots.

He found no instance in which a child escaped the disease when exposed for the first time after the age of 5 months. None under 4 months old developed measles and only one infant of five months, although all were in constant contact with brothers or sisters with the disease. He thinks it is possible that young infants escape because they breathe only through the nose, and thus the measles germs do not have free access to the throat. If an infant's nose is stopped up this protection is lost; the infant is as liable then to contract measles as older children. Wagener is convinced that transmission by fomites is practically impossible, and he has long omitted precautions in this line and has never had a case of transmission traceable to this omission. He calls attention further to the fact that over 49 per cent. of persons who had already had typical measles in former epidemics, developed symptoms on the part of the upper air passages, digestive tract, sore throat or conjunctivitis, while other members of the family were having measles. These disturbances were observed exclusively in 183 families where there were cases of measles, and they never reached a degree beyond that observed with such phenomena as complications or part of measles. They coincided, further, with the measles in the family. There is little doubt that the disturbances were the work of the measles germ, and hence that the individuals were carriers—for the time being—and liable to spread the disease. There is much evidence to prove that these carriers are responsible for the instances of transmission of the disease which have been attributed hitherto to transmission by fomites or healthy third parties.

56. **Importance of Extractives in Infant Feeding.**—Heim relates that twenty-five guinea-pigs fed exclusively on cow's milk all died in from four to fifteen days, others died promptly likewise when cellulose was added to the milk, but the animals developed normally when malt extract was added to the milk-cellulose mixture. He prepared an alcoholic extract of the germinating barley, and this seemed to contain some substance able to compensate for the deleterious action of the cow's milk. Seven infants not thriving on cow's milk seemed to benefit likewise from this extract of germinating barley, his results confirming those of Aron and emphasizing that we must pay more heed to the extractives henceforth in artificial feeding of infants.

57. **Intussusception of the Intestines in Children.**—Nagel reports three cases in infants six or seven months old, one his own child. The invagination corrected itself spontaneously in one, the nature of the disturbance not being recognized. In the others it subsided in less than thirty hours under injections of water or oil, a pint and a half, from a height of 30 inches, with the pelvis raised. The injection was repeated every two or three hours until the desired result was attained; five or six were generally enough. The intussusception is reduced the more readily the nearer the anus. Blowing air into the intestines with a T tube and bulb has also proved successful in some instances. With much vomiting, lavage of the stomach is useful. To quiet the bowels after the injections, small doses of opium may be useful. Hirschsprung recommends cautious massage. This is scarcely feasible, however, unless the invaginated portion can be palpated. Nagel strongly advocates examining the abdomen and rectum under general anesthesia. This alone may break up the invagination.

There is scarcely any other affection in infancy which strikes so like lightning from a clear sky. Nagel's own healthy infant was nursing happily in perfect health, when it suddenly screamed, became livid, its limbs hanging loose, the breathing deep and slow, the pulse imperceptible, the abdomen relaxed. The child lay in complete apathy, its body cool. This state lasted for three minutes and then a few slow movements of its limbs followed. Then it screamed again and sank anew into the alarming apathy and atony, which lasted five minutes this time. Then came a restless sleep during which it moaned and grimaced. A third attack followed, succeeded by a brief, leaden sleep. The pallor was not so extreme by this time but the pulse was small and fast, the limbs relaxed and no attempt to move them was made. Palpation of the soft abdomen seemed to hurt the child a little but no special tender point could be found. While being examined it vomited and then had another attack of pain after which it slept again. As it slept it seemed to be regaining its normal aspect and when it woke, sat up and played as if nothing had happened. It passed a few hours later a stool of almost exclusively fresh blood and mucus, and the stools showed mucus for several weeks but no blood. The boy is now 4 years old, strong and well, and has never presented any such symptoms since. In the second case, there were four or five of the attacks and one followed an enema of ¾ liter of tepid water, but then there were no more. The first day there had been three stools of almost exclusively blood and mucus. There was no fever in either case and no recurrence during the years since. In the third case the attacks continued for a day and a half, diminishing in intensity. Enemas of a liter of tepid water seemed to relieve, but there is nothing to show that they corrected directly the invagination. Hirschsprung's eleven cases all terminated fatally.

58. **Intense Anemia with Enlarged Spleen in Girl of 9.**—Kleinschmidt describes the puzzling syndrome and the numerous futile attempts to explain it before it was finally traced to the results of severe and protracted septic suppuration of the umbilical cord, the inflammatory process evidently having involved the portal vein. Türk has published two similar cases and Epstein one in which there had been multiple phlegmonous processes. The syndrome is characterized by recurring hemorrhages in the gastro-intestinal tract, entailing extreme anemia with exhaustion of the bone marrow and enlargement of the spleen. The child has improved and is doing well on a diet rich in vegetables, for the iron in them and for correction of constipation; the tendency to hemorrhage is combated by continuous systematic administration of calcium chlorid.

59. **Initial Fever with Tuberculosis.**—Kleinschmidt thinks that the assumption of an initial fever in tuberculosis will have to be deferred until more data have been accumulated He reports the case of an infant nursed by the mother in the last stages of consumption. After her death the child seemed to be thriving and its temperature was constantly normal until the fifty-first day when the Pirquet test elicited a positive reaction. The temperature persisted normal for another two weeks, but then rose and other symptoms of generalized tuberculosis rapidly followed, fatal at the age of 3 months.

Münchener medizinische Wochenschrift, Munich

February 8, LXIII, No. 6, pp. 185-224

60 Removal of Foreign Bodies Under Direct Roentgen-Ray Control. (Die operative Aufsuchung der Fremdkörper unter unmittelbarer Leitung des Röntgenlichtes.) Holzknecht.
61 Zinc Filters for Roentgen Rays. (Das zweckmässige Filter der Röntgentiefentherapie.) H. Wintz and L. Baumeister.
62 Intramuscular Colloidal Silver in Small Doses in Treatment of Inflammatory Processes. (Einige Beobachtungen bei Kollargolinjektionen in kleinen Dosen.) Gellhaus.
63 Interim Spring Artificial Leg. (Eine federnde Uebergangsprothese.) G. Frank.
64 Severe Poisoning with Acetylene Gas; Two Cases. (Ueber Vergiftung mit Azetylengas.) Nicol.
65 Functional Capacity and Development of Organs. (Arbeitsleistung und Organentwicklung.) M. Gerhartz.
66 Filters in Phototherapy. (Lichtfilter.) C. Dorno.
67 Legal Decisions of Interest to Physicians. (Der Arzt in der Rechtsprechung.) P. Kaestner.
68 Fistulas and Abscesses After Wounds of the Skull. (Die Schädelfistel und der Gehirnabszess nach Schussverletzung.) O. Witzel.
69 Sequesters Keep Up Persisting Fistulas After Fractures in War. (Die abschliessende Sequestrotomie nach Schussfraktur.) P. Janssen.
70 Treatment of Contractures. P. Erlacher.
71 Aneurysms of Femoral Artery. (Zur Kasuistik des Aneurysma der Schenkelarterie.) M. Flesch.
72 The Task of the Assistant at a Trephining Operation. (Merkblätter für Feldunterärzte. X.) E. Rotter.
73 Improved Litter for the Trenches. (Verbesserung an der behelfmässigen Trage.) H. Hamann.
74 Orthopedics for the Wounded. (Kriegsorthopädie in der Heimat.) G. Hohmann, F. Lange and F. Schede. To be continued.
75 *Prolonged Warm Soapy Bath in Treatment of Gas Phlegmon. Nahmmacher.

75. **Treatment of Gas Phlegmon.**—Nahmmacher placed the leg in a tub of soapy water, kept constantly warm for two hours and gave camphor and morphin. The gas phlegmon had developed after a shell wound of the calf, and extended from toes to knee, having developed suddenly. The leg was amply incised and drained and, after the bath, was kept raised and hydrogen dioxid poured freely every half hour on a gauze sheet laid over it. Improvement was prompt and pronounced.

Gazzetta degli Ospedali e delle Cliniche, Milan

March 31, XXXVII, No. 26, pp. 401-416

76 Study of the Urine Albumin Soluble in Acetic Acid. (Sulla cosidetta albumina acetosolubile della orine.) E. Cavazzani.
77 Vaccine Therapy of Typhoid. (La vaccinoterapie del tifo nella pratica medica.) G. De Lucchi.

April 2, No. 27, pp. 417-432

78 *Premature Menopause From Pituitary Derangement. (Menopausa precoce. Sindrome ipofisaria. Opoterapia.) G. Jona.

78. **Premature Menopause and Pituitary Treatment.**—Jona relates that the menopause came on after an attack of puerperal fever at the age of 29. Besides the amenorrhea, a tendency to obesity, hypertrichosis and polyuria developed, with vascular crises and change of character. After ten or twelve years pituitary treatment was begun, and before long menstruation returned and the general health improved, the menopause thus retrogressing. This case of premature and pathologic menopause emphasizes anew the share of the mechanism for internal secretion in the normal menopause, and it accentuates the pituitary element. The case is further interesting as showing the possibility of menstruation returning, after a pause of twelve years, under the influence of hypophysis treatment, which caused also the subsidence of certain still persisting climacteric disturbances. The woman was under intermittent pituitary treatment from August to March, and menstrual hemorrhages had returned regularly the last five months, to date of writing.

Policlinico, Rome

April 2, XXIII, No. 14, pp. 421-452

79 Influence of Staphylococcus Aureus on Rat and Mouse Cancer. (L'influenza dello stafilococco aureo sui tumori maligni.) P. Mariconda.

Riforma Medica, Naples

February 14, XXXII, No. 7, pp. 169-196

80 Gas Gangrene from Wounds in War. (Su 4 casi di gangrene degli arti da ferite d'arma da fuoco.) P. Guizzetti.
81 Pathogenesis and General Etiology of Deformity of the Human Body. C. Romano. Commenced in No. 5.

February 21, No. 8, pp. 197-224

82 *Grafts and Implants in Biology and in Surgery. (Dei trapianti ed innesti in biologia ed in chirurgia.) R. Minervini.
83 *The Protective Ferments in Tuberculosis. (Ricerche sulla reazione di Abderhalden nella tubercolosi.) L. Datta.
84 Epidemic of "Fourth Disease." A. Montefusco. Concluded in No. 9.

February 28, No. 9, pp. 225-252

85 Phenol in Treatment of Tetanus. (Sulla terapia del tetano.) S. Fichera.
86 Case of Interlobar Purulent Pleuritis. L. Pedrini.

March 6, No. 10, pp. 253-280

87 To Get Rid of Lice. (Sulla profilassi del pediculus hominis.) G. Izar.
88 *The War and Venereal Disease. (Guerra e problema sessuale.) F. De Napoli.
89 *Splenectomy in the Pathology of the Liver and Blood. (Estirpazione della milza nella patologia del fegato e del sangue.) L. Silvestrini.

82. **Grafts and Implants in Biology and Surgery.**—Minervini has had considerable experience in this line and here reviews the results accomplished by himself and others. He declares that as the capacity for growth of the tissues is greater the younger the tissues, there is every reason to assume that grafts from fetus and newly born cadavers offer the maximum prospects for success. He has been thus using for ten years embryonal tissues for free grafting in his surgical work. Skin from fetuses and still born infants proved exceptionally useful to cover the raw spaces after extensive burns. The skin of fetuses of the seventh, eighth or ninth month was used fresh or after having been kept for a few hours or days. Flaps transplanted from the back or chest of the fetus or new-born infant grow rapidly to the tissues and become solidly fastened in a few days. His communication commending the use of embryonal tissues was published in 1911 and a later report was read at the last international medical congress.

83. **Abderhalden Reaction in Tuberculosis.**—Datta got positive results in the early stages of tuberculosis but not in the advanced cases. The findings were positive also in some of the supposedly healthy persons tested and also in some patients with nontuberculous affections.

88. **War and Venereal Disease.**—De Napoli discusses the general measures for prophylaxis of venereal disease adopted in recent wars and in the present war. He advocates in prophylaxis means to prevent clandestine prostitution, collecting the women in brothels kept under strict medical supervision, with medical inspection at regular and unexpected hours, each establishment to be equipped with a sanitary toilet room near the entrance where a trained attendant should inspect the man as he enters and apply measures to sterilize and protect, and again as he is ready to leave, in addition to the hot water and mercuric chlorid solutions for immediate cleansing which should be always in readiness for immediate use. De Napoli relates that he knows of instances in which venereal disease was intentionally acquired to obtain sick leave. In his service at Bologna he has been impressed not only with the frequency of venereal diseases, but with the predominance of the ulcerating forms.

89. **Splenectomy in the Pathology of the Liver and Blood.**—Silvestrini found that rabbits bore the removal of the spleen without disturbance, but they did not develop quite as well as the controls. The liver showed no signs of anything wrong at first, except possibly a lesser production of bile. But gradually hyperplasia of the lymphatics developed, first in the vicinity of the portal vessels and then inside the liver lobes. This hyperplasia is evidently a compensating process in the lymphatic elements in the depths of the liver; it explains the increase in size of the liver which follows removal of the spleen. There were also slight changes evi-

dent at certain points in the liver, suggesting that the liver tissues had become less resistant to abnormal influences. These changes occurred indiscriminately in the different lobes of the liver. On the basis of these findings and those reported by others, Silvestrini advocates splenectomy in chronic hemolytic jaundice with enlargement of the spleen, also in hemolytic anemia, and in malaria with much enlarged spleen, and rejects it in generalized leishmaniosis, in infantile anemia with splenomegaly; hyperglobulia with splenomegaly, and in leukemia. He presents the arguments for operation or abstention in these conditions, emphasizing the class of cases in which this "medical surgery" is especially indicated in the hope to act on the general disease by removing the spleen.

Brazil-Medico, Rio de Janeiro

March 11, XXX, No. 11, pp. 81-88

90 Prophylaxis of Tuberculosis. (Sobre a profilaxia da tuberculose. A vida ao ar livre e a cultura fisica.) P. Barbosa. Commenced in No. 9.

91 Atypical States of Degeneracy. (Estados atypicos de degeneração.) H. Roxo.

March 18, No. 12, pp. 89-96

92 *Syphilis of the Stomach. (Contribuição ao estudo clinico da syphilis do estomago.) O. Clark. To be continued.

March 25, No. 13, pp. 97-104

93 Flies and Carriers as Sources of Typhoid at Rio. (Febre typhoide no Rio de Janeiro.) E. Gomes.

92. Syphilis of the Stomach.—Clark advocates a course of treatment as for syphilis in all cases of stomach trouble before resorting to operative measures, as syphilis of the stomach assumes such protean manifestations. The chronic nature, the exacerbations at night, absence of free hydrochloric acid, and gastric achylia are presumptive evidence of syphilis of the stomach, especially when the Wassermann test is positive. In one of his own cases the syphilitic stenosis of the pylorus in a tabetic was accompanied by a negative Wassermann. He comments on the exceptional frequency of syphilis of the stomach at Rio; he encountered six cases last year. The general practitioner is the one who sees these stomach cases first and hence his proper differentiation of them is of paramount importance. Clark is convinced that the number of cases which escape detection is considerable. They may run an entirely latent course until suddenly they entail severe hemorrhage. This occurred in two of his cases. In two others there was likewise severe hemorrhage, but it had been preceded by violent pains in the stomach. None of these four patients succumbed to their profuse hemorrhages. Another patient had had severe hematemesis on three occasions in the course of several months before the syphilitic nature of the trouble was suspected. Treatment as for syphilis was then given, and there has been no further trouble from this cause during the three years since. He gives an illustration of the necropsy findings in a case of supposed chronic ulcer of the duodenum. After a profuse hemorrhage, operative treatment was applied and the patient died. Necropsy revealed a large and ulcerating gumma close to the pylorus, adherent to the pancreas. No one had thought of applying the Wassermann test. In some other cases, tentative mercurial treatment just before a contemplated operation, rendered the latter unnecessary.

Two of his patients had been martyrs for years to chronic dyspepsia, with nausea and vomiting, and had run the gamut of therapeutic measures, none giving relief until specific treatment was tried, when a cure soon followed. The cure has been complete during the several years to date. He reports with much detail his various cases, emphasizing the differential points.

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XV, No. 1, pp. 1-241. German ed. Last indexed March 18, p. 929

94 *Two Cases of Progressive Inflammation and Hypertrophy of Interstitial Tissue of Nerves, With Necropsy in One Case. (Ueber Neuritis interstitialis hypertrophica et progressiva—Dejerine und Sottas.) K. Yokomori.

95 Atypical Congenital Myotonia With Tetanic Symptoms. (Zur Kenntnis der atypischen Thomsenschen Krankheit, kompliziert mit Pseudohypertrophie und Atrophie der Muskulatur und tetanischen Symptomen.) Y. Kato.

96 *Blastomycosis of the Meninges. (Ueber Blastomycetenmeningitis.) K. Goto.

97 *Bradycardia From Deficient Thyroid Functioning. (Die durch die Hypofunktion der Schilddrüse bedingte atrioventrikuläre Automatie des Herzens.) S. Sakai.

98 *Total Heart Block. (Klinisch-experimentelle Beiträge zum totalen Herzblock.) K. Marui.

99 *Substance in Expired Air Inhibiting Catalysis of Blood and Platinum. (Ueber eine Platin- und Blutkatalyse hemmende Substanz in der Ausatmungsluft des Menschen.) Y. Takasaki.

100 *The Internal Secretion of the Kidney and Its Influence in Regulating the Sugar Content of the Blood. (Zur Kenntnis der inneren Sekretion der Niere und ihre Bedeutung für die Blutzuckerregulation.) T. Itakura.

94. Progressive Neuritis with Hypertrophy.—Yokomori reports two cases of the affection described in 1893 by Dejerine as *névrite interstitielle hypertrophique et progressive*. Yokomori's patients were a farmer of 74 and his son, a bank clerk of 38. The first symptoms developed in the forties and twenties, a weakness in the legs, with gradual inability to hold the foot up—paralytic talipes equinus varus. Atrophy of the muscles in legs and hands followed in time. The tendon reflexes were all abolished, but the coordination of muscular movement was unimpaired, as also sphincter functioning. Most of the peripheral nerves could be palpated as thickened and hardened, and necropsy in the first case showed that this was due to peculiar changes in the sheath of Schwann and the interfascicular connective tissue. The cases are compared with the few analogous ones on record and the points differentiating them from somewhat similar nervous affections are emphasized. Five plates accompany the article, one colored to show the contrast staining.

96. Blastomycotic Meningitis.—Goto's patient was a member of the legislature, 61 years old. A three page clinical chart of his case is given, with three colored plates showing the necropsy findings in the brain and meninges and in the lungs of mice inoculated with the cerebrospinal fluid. The main symptoms had been headache, tinnitus, deafness, persisting "cold in the head," anosmia and diplopia, with pains in the right leg and reduced sensibility in the right trigeminal region. During the seven month's course there was no fever until toward the last, when symptoms of meningitis became pronounced. From the first were noticed right abducent paralysis and atrophy of the right half of the tongue. The fluid at lumbar puncture the fifth month was under high pressure and contained blastomycetes and 3 or 5:1,000 albumin. No point of entry for the blastomycetes could be discovered, but innumerable blastomycotic nodules were found on the pia, containing blastomycetes and giant cells in profusion.

97. Bradycardia of Thyroid Origin.—Sakai gives several charts and tables to show the course and details in a case of disturbance of impulse production, auriculoventricular automatism, with pronounced bradycardia—pulse 42—all evidently traceable to irritation of the vagus nervous system. The data presented demonstrate that this irritable condition of the vagus is the result of lack of the normal thyroid secretion. The thyroid functioning was at a very low ebb, and the heart disturbance could be corrected at will by injecting atropin, by exercise and baths or by thyroid treatment. The patient was a woman of 42 who had long had an apparently ordinary goiter, and complained of loss of hair and menorrhagia. Sakai says that he knows of no analogous case on record in which impaired functioning of the thyroid was responsible for abnormal impulse production of this type in the heart.

98. Total Heart Block.—Atropin had no appreciable influence on the total heart block in one of Marui's two cases. In the second the ventricle beat increased by eight beats, showing that even with total heart block the vagus may yet exert a certain control over the ventricle. Injection of epinephrin in the first case, a working man of 59, induced the bigeminus picture; the extrasystoles with the total heart block are ascribed to stimulation of the accelerator nerves. Under the influence of the epinephrin the pulse became accelerated and at the same time the rare phenomenon of interference was observed. There was evidently pronounced sympatheticotony, with extreme susceptibility to epinephrin. The electrocardiograms and other tracings show the peculiar features of the two cases.

99. **Chemical Action of Substances in Expired Air.**—Takasaki reviews the literature on the toxicity of expired air and reports personal research in this line. Ikeda recently found that some substance in expired air was able to inhibit the hydrogen dioxid-splitting power of colloidal platinum. Takasaki has been repeating his experiments and has confirmed his statements. The substances condensed from the water with the expired air check catalysis of colloidal platinum and also of blood catalase. This substance in the expired air cannot be either ammonia or carbon dioxid. The inhibiting property was found least pronounced in persons with diabetes insipidus and adiposogenital dystrophy, and greatest in patients with cirrhosis of the liver. The substance in question is probably formed in the gastro-intestinal tract and eliminated through the lungs. On the other hand, none of the animals injected with the substance showed any signs of toxic action.

100. **The Internal Secretion of the Kidneys in Connection with the Sugar in the Blood.**—Itakura relates that the sugar content of the blood became much higher in an hour or hour and a half after the veins or arteries of the kidneys had been tied off. The increase was much higher after ligation of the veins than of the arteries. This effect was less apparent when much blood had accumulated around the kidney. These facts are accepted as evidence of an internal secretion in the kidney which keeps the blood sugar within normal range. Even the extravasated blood from the kidney is capable of maintaining the control. Still more striking testimony is the fact that the abnormally high sugar content in the blood after ligation of the renal vein could be brought down to normal by subcutaneous injection of blood from the renal vein of another, nontreated animal.

Prakticheskiy Vrach, Petrograd

XV, No. 1, pp. 1-12

101 Case of Complete Transposition of Viscera With Duplication of Left Ureter. (Situs inversus completus s udvoeniem lievago mochetochnika.) Komendantoff.

No. 3-4, pp. 21-32

102 Spina Bifida; Three Cases. D. E. Gorokhoff.

No. 5, pp. 33-44

103 Chronic Pancreatitis. M. Einhorn (New York). Commenced in No. 2.

No. 6, pp. 45-56

104 Diagnosis of Localization of Point of Injury of Blood Vessel in Wounds of the Legs. (K diagnostiki miesta zakuporki sosudov pri gangrenie nizhnikh konechnostei po dannim, poluchennim pri perevyaskie sosudov.) V. M. Volkovitch. Commenced in No. 5.

No. 7, pp. 57-68

105 Conservative Treatment of Acute Otitis Media With Opium. L. N. Kogan. Commenced in No. 6.

Russkiy Vrach, Petrograd

XV, No. 7, pp. 145-168

106 *The Pediatrician in the Campaign Against Infant Mortality. T. D. Roumianzeff.

107 Foreign Bodies in the Eye. (Ob inorodnikh tielakh v glaznitzie.) A. M. Nikolsky.

108 *Elimination of Sodium Chlorid in Scarlet Fever; the Chlorometer of Dr. R. Weiss. (O vidieleniij povarennoi soli pri scarlatinie.) S. E. Ostrovsky. Commenced in No. 5.

109 Case of Natural Separation of Vermiform Appendix. P. A. Gloushkoff.

110 Technic for Bloodless Operations on the Skull. (K tekhnikie predvaritelnago obezkrovlivania pri operatziakh na cherepie.) U. U. Djanelidze.

111 Registration of Respiration in Frogs. (Registratzia dikhanii u liagushek.) I. P. Michailovsky.

No. 8, pp. 169-192

112 *Recurrence of Gallstones After Removal of the Gallbladder. (O vozvratakh zhelchnokamennoi bolieznі poslie udalenia zhelchnago puziria.) A. A. Kadian. Commenced in No. 7.

113 Explosive Bullets in the Present War. E. V. Pawlow.

114 Possible Droplet Transmission of Typhus Fever. (K voprosu o zarazhenii cipnim typhom.) V. K. Stefansky.

115 Prophylactic Inoculations Against Typhoid and Cholera. V. I. Nedrigailoff.

116 *Iodin in Ophthalmic Surgery. (Opit primienenia sposoba Grossich'a v glaznoi chirurgiy.) B. B. Orechkin.

106. **High Infant Mortality in Russia.**—Roumianzeff points out in his article the fact of the tremendous infant mortality in Russia. He says that it is higher there than any where else in the world among civilized nations. Of the five or six millions of new-born children each year, a million and a half die before they reach the age of one year. In some regions of European Russia up to 600 of every 1,000 succumb, that is, over 50 per cent., in contrast to the 7 or 8 per cent. infant mortality in Sweden and Norway. The causes he traces to poverty, ignorance, and lack of suitable social and economic factors, combined with insufficient and improper infant nursing and care, and also the frequency of gastro-intestinal disorders in children. These dangers are multiplied by severe infectious diseases, such as scarlet fever, measles, etc. Measures for infant welfare and for reduction of infant mortality are now realized as matters of national importance in Russia, and have been officially taken up by the government.

108. **Elimination of Sodium Chlorid in Scarlet Fever.**—Ostrovsky's conclusions are as follows: In the initial stages of scarlet fever there is retention of chlorids, as well as in relapses of scarlet fever; from the tenth to the twentieth day of the disease the amount of sodium chlorid eliminated rises in waves. In some cases the wavelike rise is followed by a wavelike fall. A surplus amount of sodium chlorid given with the food is eliminated by the patient during the two or three following days. Weiss' apparatus was found very accurate and superior to any other method of which he knows for quantitative determination of the sodium chlorid in the urine.

112. **Recurrence of Gallstones After Removal of Gallbladder.**—Kadian reports in detail a case of cholelithiasis successfully operated on with removal of the gallbladder. Six years after the operation the patient returned to the clinic with new symptoms of cholelithiasis. Operative treatment was applied anew and at the second operation a new formed gallbladder was found, continuous with the common bile duct. The latter contained about ten cholesterin stones (cholesterin 76 per cent. and bilirubin 17 per cent.). Kadian gives a review of 28 cases somewhat similar which he gathered from the literature. In his case a small stone must have been, he thinks, left in the common bile duct. It kept gradually increasing in size, during the six years, because of deposits of bilirubin salts. The origin of the gallstones he ascribes to the liver itself. True relapses with new formation of stones are exceedingly rare. To prevent recurrence, the operation must include not only the removal of the gallbladder and the stones within, but opening up of the common bile duct and removal of all concretions. The cystic duct must be ligated as low as possible to avoid formation of a diverticulum to form a new gallbladder. No ligatures, sutures or gauze threads should be left in the duct.

116. **Iodin in Operating on the Eyes.**—Orechkin used 5 per cent. alcoholic tincture of iodin with brilliant results in numerous ophthalmologic operations. The patient's lids, portion of forehead, corresponding side of the nose, cheek and temporal region were painted with the 5 per cent. tincture. Moist regions and the eye secretions are dried previous to the application of the iodin solution. The latter must be always freshly prepared. The burning sensation caused by the iodin may be quite severe, in spite of preliminary cocainization, but disappears in a few minutes. After the painting with iodin, the conjunctival sac, in operations on the eyeball, is flushed copiously with a sterile 1:5,000 solution of cyanid of mercury. None of the 237 cataract operations gave suppuration, while with other antiseptic methods he had suppuration in 2 per cent., with subsequent loss of the eye. In 1,200 other operations on the lids and adjacent portions only in five cases was there suppuration in the sutures, and he explains this complication by the low grade of intelligence of the majority of his patients. He comes to the conclusion that Grossich's method of disinfection of the operative field is the best and that it should be given preference also in ophthalmic surgery.

Hygiea, Stockholm

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117 Colon Entirely on Right Side in Young Woman. (Om ett fall av dextroposition av colon.) S. Tengström.

118 Anthropologic Study of Tubercles on Inner Surface of Lower Jaw Bone. (Typologiska studier över spina mentalis interna hos människan.) G. Backman.